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AN INTERESTING CASE OF MOUTH RESPIRATION IN A FOAL.

BY THOMAS GOODALL, M.R.C.V.S., CHRISTCHURCH, HANTS.

It is generally admitted to be an established fact that the horse cannot respire through the mouth. The following case may therefore be of sufficient interest to be placed upon record, as demonstrating that, under certain circumstances, this prevalent idea may not be correct.

On Sunday, April 7th, I was asked to see a foal which had been born three hours when the messenger left, the mare's delivery having been a normal one, and accomplished without assistance.

The message I received was that the foal was choked. It had experienced a difficulty in breathing from the time of its birth, and the notion, which is a prevalent one, was that the choking was due to its having taken some of the *liquor amnii* into its air passages during its first inspirations.

The colt was dead on my arrival, and I asked for the body for dissection. In my endeavour to obtain a correct view of the cavity of the fauces, the openings and course of the Eustachian *canals*, etc. (it is an error to call these passages in the horse "tubes"), I found in this case that the mucous membrane of the fauces was reflected over the openings of the posterior nares (completely and effectually occluding these orifices), and then down the posterior border of the *velum palati.*

The posterior nares were thus *completely and entirely* closed, so that no air could possibly have passed through the nasal chambers to the lungs; and yet the lungs had been inflated, and the colt had lived and breathed for *four hours;* indeed, I was informed that he had made several attempts to rise to his feet, and the attendants had endeavoured to give him milk from a bottle, but

the attempt to swallow had induced a paroxysm of apparent choking. (Is it possible to account in any rational manner for the custom of those attending stock of any kind—of course I am alluding to the illiterate attendants—to pour fluids down the throat of a choking animal?)

In a country practice we often hear of foals and calves being "choked by the fluids" at birth. It is just possible that the abnormality I am here describing may be of more frequent occurrence than we imagine. If it should ever be suspected, I found that by passing a blunt whalebone probe up the nostril the membrane could be broken with a little force (or possibly the new laryngotomy operation might be of use), and this knowledge might aid a practitioner in saving the life of a valuable colt.

A CASE OF TUBERCULOSIS IN A DOG.

BY AUSTIN PETERS, M.R.C.V.S., BOSTON, U.S.A.

THE following case of Tuberculosis in a dog illustrates the transmissibility of this disease from mankind to the lower animals:—

The animal in question was a young white poodle dog. I was first called to see him on December 29th last, and was told that he had been sick several days, and the owner's family thought he had taken cold. When I first saw him his nose was cool and moist, the respiration rapid and jerky, somewhat abdominal. The history then was that at times his nose was hot and dry, and that his appetite was capricious, sometimes good, and at other times poor.

I thought it was a bad case of bronchitis, and prescribed a simple cough syrup, telling the people of the house to let me know if he was not better in a few days. I saw him again in much the same condition December 31st, and again January 2nd.

On January 2nd I learned more of the history of the case, which aided me in reaching a hasty, but as was afterwards proved, a correct diagnosis.

Mrs. H., the wife of the owner of the house where the dog was kept, died of Consumption, November 8th last, after a long and lingering illness of over a year. The dog, then a puppy, had been given to the children of the family the previous July, and I was told that he had acquired the disgusting habit of eating the sputa coughed up by Mrs. H., from the spittoon, whenever he had an opportunity, although he was continually driven away when he was noticed to be indulging his abnormal appetite.

"Is it not possible," I was asked, "that he may have taken Consumption from Mrs. H.?" I thought it not only possible, but

probable, and as he was the pet of young children, advised his speedy destruction. He was therefore shot that evening (January 2nd), and I held an autopsy upon him the following morning.

The *post-mortem* examination revealed Phthisis of both lungs, with a large abscess in the posterior lobe of the left. There was also a little sero-purulent fluid in the thoracic cavity, and a somewhat fatty liver, which I thought might contain miliary tubercles.

Scrapings were made from the wall of the abscess, and smeared on cover-glasses, and then stained for the bacilli of Tuberculosis, which I found in large numbers under the microscope. In places there were clumps of bacilli, ten or twelve in number.

Cover-glass preparations were also made from the liver, but revealed no bacilli or signs of tubercle; they contained, however, a large number of fat cells.

Owing to lack of time, no sections were cut for examination from either lungs or liver.

Excepting the liver, the abdominal viscera appeared healthy. I regret to say that I did not open the stomach or intestines, but they showed no outward signs of disease. This appears to be a case of inhalation Tuberculosis, rather than one of ingestion; but the bacilli, no doubt, gained access to the respiratory apparatus as a result of the dog's filthy habits.

We often hear stories of dogs and cats kept as pets by Consumptives, pining away and dying, but we do not often have a case recorded, backed up by absolute proofs, where a *post-mortem* is held on the animal, and the bacilli found as final evidence of the disease.

THE TREATMENT OF TETANUS BY ANTIPYRIN.

BY A. B. COTTELL, M.D., SURGEON-MAJOR, ARMY MEDICAL STAFF, CHATHAM.

I AM induced to report the following case, not so much for its own merits, as it stands alone, and the improvement may have been a coincidence, but in order that others whose work lies with horses, etc., may give the drug I employed a fair trial, which, of course, I am unable to do. I may add that I have purposely delayed giving any account of the matter until sufficient time had elapsed to warrant a belief in a cure.

Tedworth, a brown hunter about nine years old, of a quiet but nervous temperament, with a good previous history, was staked in the off-hind frog on March 4th, 1889.

Lameness appeared a week later, and an abscess formed and was treated. This quite healed. On the 21st he first showed signs of Tetanus, and was treated for that disease by a veterinary surgeon,

who placed him in a darkened coach-house, where I have since kept him until May 4th. The stiffness increased, and when I first saw him, on March 25th, the disease was well marked.

March 25th, 12.45 p.m.—Weak legs, and body as hard as a board, tail cocked, no grinding motion in jaws, abdomen blown out, nose dry, eye staring. Prescribed 20 grs. of antipyrin at 1.15 and 3 p.m.

Second Visit, 40.30 p.m.—Less apparent stiffness. 20 grs. at 6 and 9 p.m., midnight, and 6 a.m. Yolks of three eggs to be given in his mash three times a day. Carrots, oatmeal, boiled oats. Half-a-pint of stout was given with difficulty and with so much apparent distress that it was not repeated.

26th, 9 a.m.—Tetanus less marked, tail held naturally, abdomen less inflated, nose cool, cast natural, makes very little water. 10 grs. at 9.30, 12, and 4 p.m.

5.30 p.m.—Improvement maintained, muscles less tense. 10 grs. at 8, 12, and 6 a.m. Food as before. Boiled pearl barley. Cast good, stales easily.

27th, 10 a.m.—Moves more easily, muscles softer. 10 grs. at 12, 6, and 12 a.m. Taking his food well, coat softer.

28th, 10.30 a.m.—Some grinding motion of jaws, the neck can be bent. 10 grs. at 8, 3, and 9 p.m. Some œdema of sheath, off hind puffy each side of hock, legs bandaged. Two small feeds of hay, took water for the first time since the 26th (the mashes have been sufficient before). Cast moist and plentiful.

29th.—10 grs. at 6 a.m., 12 and 6 p.m. Improving.

30th.—5 grs. at 10 a.m. and 10 p.m. Three feeds of hay, dry rub down.

31st.—5 grs. at 9 a.m. and 9 p.m. Had him coaxed out of the coach-house into the sun for ten minutes. Very weak and stiff from confinement.

April 1st and 2nd.—5 grs. at 10 a.m. Condition unchanged. Food as before.

3rd.—As the hock remained enlarged, and the fetlock and shank were also very œdematous, some of the old frog was removed; no local mischief could be detected. The leg to be fomented three times during the day, dry flannels between the fomentations. The sheath, which is very œdematous and pendulous, to be supported in a sling.

4th.—Taken in the sun for fifteen minutes; good dry grooming; hay increased. He lay down last night for first time. Sheath smaller; can stale easily.

From this date until the present time he has steadily improved. He had 2 qts. of milk and a dozen eggs from April 3rd until the 25th, when the milk was stopped and eggs cut down to six, and he

now gets the usual food. He is taken out for half an hour's walking exercise twice a day, weather permitting, and was shod on April 30th. He walks easily, and, as far as I can see, there is no appearance of Tetanus.

I was led to employ the drug as it is known to allay exaggeration of nervous activity, while one of its advantages is its solubility, which makes its administration easy.

[Much reliance cannot be placed upon antipyrin as a remedy for Tetanus, until it has proved successful in a number of cases. A great many drugs have been lauded from time to time as beneficial in the treatment of this disease, but after prolonged trial nearly all have been discarded. Recoveries not unfrequently take place without the administration of any medicine, and it is generally found that the less the patient is dosed and troubled the better.—Ed. *V.J.*]

TROPICAL PITYRIASIS.

BY R. W. BURKE, M.R.C.V.S., A.V.D., LONDON.

I have had the opportunity of seeing some hundreds of cases of this disease in seven years' practice in India, besides others I witnessed in the Stud Department when permitted to see practice under Messrs. Oliphant and Batt many years ago. I have made some histological observations of the pathological changes set up in the skin by this disease, and have carried out inoculation experiments on animals. I have seen many methods of treatment adopted by different veterinary surgeons, and recommended some myself. I have witnessed a fungus described in my work on "The Tropical Diseases of the Horse," published last year, and mentioned in most text-books by German authors, which Mr. Haslam believes is closely allied to the *Tricophyton furfuracea*, if it is not that parasite itself (The Veterinary Journal, March, 1889). I have found, however, the fungus said to be peculiar to this disease, in substances outside of this particular malady and in other forms of skin disease. I have also found that the disease is not communicable by inoculation.

From these facts, and from the results of my experiments, I came to the conclusion that the fungi are only concomitant, and are neither diagnostic nor the cause of the disease.

Referring to this question, I may be permitted to quote from a former article on the subject by me, which runs thus: "The disease examined microscopically shows in the field of observation epithelial cells, fibrils, granular particles of pigment, besides fungi, tissue shreds and inflammatory products developed in the process of secondary inflammation. The German veterinary sur-

geons* have long recognised, and Mr. Henry Tryon,† naturalist and microscopist, Brisbane, has lately noted the presence in this disease of an exceedingly minute fungus, which occurs in immense numbers in the cells of the cuticle hair follicles. It is not known positively whether this disease is actually caused by the fungus, or by tissue change (see article on 'Vegetable Parasitic Skin Diseases' in *The Veterinarian* for February, 1888), since various species of micro-organisms have been now isolated from the epidermis of the normal skin, but it is not settled whether in their distribution and in their action they bear any definite relation to the morbid process. We may conclude that to those several species of parasites already known to exist in the epidermis, another species has been added" ("The Tropical Diseases of the Horse," by R. W. Burke, 1888).

Regarding the possible "source of the disease to the human subject not suspected before," which has been alluded to by Mr. Haslam, I may state that, during the whole of my experience in India, when this disease has been seen to be most prevalent among the horses, not one case was witnessed among the syces and the soldiers who had the grooming of the latter. It has been stated in favour of its fungous origin, that in a particular damp station the disease was noticed to be more prevalent one year than it was elsewhere. My experience teaches me that there is no place I know of where the disease is more prevalent in India than Cawnpore and Allahabad, for example, and the dry heat of these parts is well known to old residents. Mr. Haslam has no confidence in local blistering over the kidneys and diuretics, although he has "no experience" of either, in the treatment of this disease. I can only inform him that I have had recoveries from this mode of treatment when all local applications to the skin failed to produce any effect, and in many cases when the latter were discarded to note the effects of the diruretics employed.

It is clear that climate has a more or less direct influence upon the prevalence of this disease, which appears only during the hot weather, and rarely in the winter, and is practically unknown or infrequent in colder climates, as in England—at least, as a prevalent disease in the horse. It is not surprising, seeing that the hot weather is a predisposing cause of skin disease in India, to find that a much larger proportion, if not all of the horses, are attacked during the summer; and it may be here noted that the special liability of horses to be affected by skin diseases in India is not found to obtain in other parts of the world, and must be due to local causes. I have carefully examined the register of sick

* *Lehrbuch der Pathol. u. Therapie der Hausthiere*, Roll.
† *The Veterinarian*, June, 1888.

animals at several stations in India, and found hot stations were those in which the largest number of admissions were noted from this disease.

Natural dampness of the air, as during the rains in India, which causes maceration of the epidermis and affects normal secretion of the skin, may be looked upon as another cause of this disease.

Local irritation connected with improper grooming, collection of dirt, of lice and ticks, etc.

Constitutional tendency.—The liability to the disease in previous years promotes the tendency to it, and in such animals the disease may be said to be constitutional. In many cases the animals suffer from a state of disease which is truly chronic, as shown by the veterinary history sheets.

Defective action of the correlated organs, leading to hyperæmia of the skin: hence over-feeding, excess of water taken during the hot weather, etc., throw extra work on the skin and lead to disease.

High feeding.—The question of high feeding as a cause of disease is not only interesting, but important. I will only remark on it that the greater the amount of nitrogenous food given to animals, and the greater the work thrown upon the eliminatory organs, the greater the liability to disease. If the function of the kidneys, etc., has to be taken up by the skin during the hot weather in India, high feeding only increases liability to disease, and precautions should be taken for its prevention.

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Editorial.

CRUEL OPERATIONS ON ANIMALS.

THE judgment delivered by Lord Chief Justice Coleridge and Mr. Chief Justice Hawkins, on the legality of dishorning cattle, is important from several points of view, but especially with regard to the *jus animalia* and the interests and fancies of mankind. The practice of dishorning cattle is prevalent only to a limited extent, chiefly in Ireland, and attempts have been made on several occasions to suppress it, on account of its cruelty, these attempts being only rarely successful. The present case which called forth the judgment of the high legal functionaries alluded to, came before them by way of appeal from a decision of the Norfolk magistrates at the Blofield Petty Sessions, as already announced in this journal for last May. According to the *Times* remarks on the case, Mr. Wiley, a Norfolk farmer, had been summoned, at the instance of the Society for the Prevention of Cruelty to Animals, for having unlawfully and cruelly tortured thirty-two bullocks by dishorning them. The facts were in no dispute. Mr. Wiley admitted that he had done what was alleged, and gave every facility to the officers of the Society for ascertaining how it had been done, and in what state the animals operated upon had been left. That the operation, as performed on Mr. Wiley's farm, had been attended with intense and prolonged suffering to the animals was clearly proved, and does not seem to have been denied. The defence set up was that it was necessary for a variety of reasons. It added to the value of the animals; it enabled them to be packed more closely than they could have been if they had retained their horns, and it prevented them from inflicting injury on one another, whether closely packed or not. The magistrates in the event dismissed the case, but without costs, since they considered that the Society had done great good by instituting it, and at the request of the Society they stated a case for the opinion of the Queen's Bench Judges, giving the reasons of their decision, and asking whether the dismissal was to stand.

The question has been met with a decided negative by the judges to whom it has been referred. The operation of dishorning, as it is ordinarily practised, and as it was practised on Mr. Wiley's farm, has been pronounced cruel and indefensible. "Detestably brutal" was Lord Coleridge's language in describing it. Mr. Justice Hawkins termed it a "revolting operation," so torturing that he shuddered to think that men could be found to perform it. As to its absolute illegality, both judges are in agreement. That it adds somewhat to the selling value of the animals they held to be no adequate defence for it, the rather since the results aimed at can be attained equally well without it. The cruelty of the operation, amounting to downright torture,

was proved by most convincing veterinary evidence, and was substantially admitted by the defence. Its details were characterised as "utterly disgusting," etc., and showed that the operation was detestably brutal, the beasts being placed between two waggons one at a time, a plank being secured to two stout oaken posts, to which the animal's head was fixed as in a vice, and two men held the head, while a third sawed off the horns with a common saw. After the operation the bullocks bled for five or six minutes, and at a later stage there was a discharge of pus, which continued for some time. The animals, it was said, made such a noise that they might be heard a mile off. Every tooth of the saw caused excruciating pain, and the inflammation following the operation produced great and prolonged suffering. It was demonstrated that the main benefits of it could be obtained by a more simple and painless process, except indeed as far as it enabled the seller to put a fraud on an incautious purchaser as to the animal's breed or age. As to its alleged necessity, the court was clear that a practice which had for many years been unknown or wholly discontinued in England and Wales and in most counties of Scotland, and had only recently been introduced from Ireland, could not be thought necessary. In any case, there must be some proportion between the object aimed at and the means. In the case before the Court no such proportion could be found. The animals had been "hideously tortured" in order to put a few pounds more into the owner's pockets; and this, Lord Coleridge said, is an instance of such utter disproportion between the thing done and the result as to stamp it as barbarous and unlawful. The end sought, Mr. Justice Hawkins added, may not be attained at the sacrifice at which it must be had. For a man to buy horned cattle, and to enhance their value by mutilating them at the expense of excruciating torture to the animals, must be set down as needless cruelty. Some former cases, which have been decided in an opposite sense, were put forward by the defence, but were set aside by the Court with full expression of the respect due to the authorities before whom they had been heard. Partly, there was no proof that the evidence of gross cruelty had been as overwhelmingly strong as in the Norfolk case. Cruelty, in the legal sense, must be a question of proportion and of degree. Pain may legitimately be inflicted for a necessary or sufficient end. In the case before the Court both these conditions were wanting. The pain inflicted had been unnecessary, and it had served no end which amounted to a justification, or came near it. Partly, too, some earlier decisions were overruled. It was not enough, Mr. Justice Hawkins said, that there should be an honest belief that the torture was not illegal, or that it was for the animal's good. If such a principle were admitted, there could be no limit to its application, and ignorance and cupidity would have free play to inflict any amount of suffering for any cause or for none. The judgment of the Court therefore was, that the practice of dishorning cattle is illegal, and ought to be suppressed, and that in the case before them the magistrates ought to have convicted.

This judgment has an important bearing not only upon the practice

of dishorning cattle, but upon other operations to which animals are subjected on a similar plea, and chiefly by amateurs. Hints were thrown out that possibly these practices, which, if more necessary were not the less torturing, might in some instances be held equally open to remark. Mr. Chief Justice Hawkins, in expressing his opinion on the case in question, alluded to some of these, and among them "docking" of horses, which, he said, was a painful operation that might be occasionally justified; but, he added, "I hold a very strong opinion against allowing fashion or the whims of individuals to afford a justification for such painful mutilation. These instances," he said, "indicated his view that the legality of a painful operation must be governed by the necessity for it, and even where a desirable and legitimate object was sought to be attained, the nature of the operation and the pain caused thereby must not so far outbalance the importance of the end as to make it clear to any reasonable mind that it is better that the object should be abandoned rather than the suffering should be inflicted."

The veterinary profession will hail with satisfaction the decision and the opinions of the learned judges on this dishorning fashion and on the rights of animals. Its members are, by virtue of their calling, bound to protect the lower creatures from pain and torture, and, as in this case, they have never been slow to acknowledge and assume this duty.

INFECTIOUS ABORTION IN A FLOCK OF SHEEP.

LABAT, clinical professor at the Toulouse Veterinary School, has recorded an outbreak of infectious abortion among a flock of ewes which he recently witnessed, and which possesses some features of much importance with regard to this occurrence in other than the ovine species. He remarks, in introducing his account of the occurrence, that infectious abortion, known also as enzoötic and epizoötic abortion, which is very common among bovines, is not very rare among mares, if we may accept the evidence of Delorme, Fischer, Huveillier, Trélut, etc., but few authors refer to this accident among sheep. Delorme has seen it occur *somewhat frequently* amongst the flocks on the plains of Arles and Camargue, and H. Bouley included ewes among the female animals which suffer from enzoötic abortion. Cows occupy the first place, then mares, and lastly ewes. The literature of the subject being very meagre, Labat considered his report would offer some interest.

The outbreak occurred among a flock of twenty-four ewes, aged four, five, and six years, in a little commune in Aude, at the foot of the Montagne-Noire. It was kept in a confined, low, badly ventilated and lighted sheep-fold, which was seldom cleaned out. At all times the sanitary condition was generally bad in the country, the mortality averaging four or five per cent. in the flocks every year. The ewes in question had consorted with one ram, four years old, for a month, and they would have lambed at the end of February or beginning of March. On December 29th, 1888, one ewe, four years old, aborted without any assignable cause; previous to that date it looked lively and well. A few hours after aborting it fed as if nothing abnormal had happened, and it remained in good health. The same thing

happened with fourteen other ewes, which aborted between December 28th and January 15th. All these animals had been already bred from, and had never before miscarried; they were at the end of the third or commencement of the fourth month's period of gestation.

On January 19th, Labat was consulted with regard to the state of the flock, and he prescribed the following precautions:—

1. Evacuate the sheepfold.
2. Separate the pregnant ewes from those which had aborted.
3. Place the pregnant ewes in a clean, well-ventilated place.
4. Every week remove the dung, clean the floor, the walls, and racks with boiling potash-water.
5. Every ewe which aborts to be immediately removed from the healthy to the second group (those which have aborted); complete delivery if it is incomplete. Replace the soiled litter. The fœtus and membranes to be steeped in lime and buried in an out-of-the-way place.
6. Every morning sponge the vulva, anus, perinæum, and tail of the ewes with a solution of corrosive sublimate, according to the following formula:—

Corrosive sublimate	1 gramme.
Alcohol	100 grammes.
Boiling water	2 litres.

7. Feed on good food and avoid chills.

Vaginal injections were not recommended, for fear of proving a cause of abortion if badly given.

This treatment was continued from the 21st January, and between that date and the 25th of the same month there occurred four abortions. These were the last. On February 8th the treatment was suspended, so far as the antiseptic spongings were concerned, and at the expected period—end of February and first days of March—lambing commenced, and finished in a normal manner. In the meantime the old sheepfold had been cleansed and disinfected, and is now occupied by the flock.

The expense of the measures was trifling, and carrying them out was not very exacting, two persons only having been employed for an hour every morning during the eighteen days they were enforced.

THE DISHORNING OF CATTLE.

In a note in the Journal for May (page 391) allusion was made to a trial which had taken place in Norfolk with regard to dishorning cattle, and to an appeal against the decision of the magistrates who had dismissed the case, and which was argued in the Queen's Bench Division. On May 18th the Lord Chief Justice and Mr. Justice Hawkins, before whom the case had been argued, gave their written judgment.

The Lord Chief Justice said the details of the evidence given in the case were utterly disgusting, and showed that the operation of dishorning was detestably brutal. It was not beneficial to the animal, although it enabled one or two pounds more to be realised upon a sale, the coarseness of the cattle, which was shown by the horns, being concealed. It was stated that it was a most cruel practice, causing fearful pain, and absolutely unnecessary, and this not by sentimentalists, but by men of the world dealing with scientific matters in a scientific manner. He was of opinion that the operation was not a necessary one, and that therefore the case should be remitted back to the magistrates to deal with.

Mr. Justice Hawkins concurred in thinking the magistrates wrong. Judgment was given accordingly.

CONTAGIOUS PLEURO-PNEUMONIA EXPERIMENTS IN QUEENSLAND.

At the invitation of the Board appointed by the Queensland Parliament to investigate matters connected with inoculation for Pleuro-pneumonia in the herds of that country, a large number of persons interested in pastoral pursuits in Queensland assembled at the Quarantine Station, Indooroopilly, on March 8th, to witness a public demonstration of the experiments conducted by Dr. Germont and M. Loir, the French scientists. There were present: The Hons. A. J. Thynne, W. Smyth, and J. F. M'Dougall, MM.L.C.; the Hon. A. Norton, Speaker of the Legislative Assembly; Messrs. Crombie, North, Lyons, Paul, Cowley, Foxton, and Palmer, MM.L.A.; Messrs. A. C. Grant, P. R. Gordon, Sir Somers Vine, C. B. Dutton, J. M'Andrew, B. Purcell, J. S. Higginson, J. D. Wienholt, Byrnes, W. B. Slade, William Castles, R. Newton, A. M'Dowall, J. Irvine (vet. surgeon), T. Noyes, C. Williams, E. B. Jeune, J. A. Donaldson, de Burgh Persse, H. Bracker, and Dr. Gibson, besides a number of other gentlemen interested in pastoral pursuits.

The primary object of the experiments was to demonstrate the practicability of taking the virus of Pleuro from the animal and transmitting it to those at a distance who have herds which require inoculation. The general arrangements for the experiments were superintended by Dr. Germont. A calf which had been inoculated behind the shoulder was killed. The inoculation took place on the 12th February, and the body of the unfortunate animal was greatly swollen by infiltration beneath the hide. The swellings were first hammered with an ordinary carpenter's hammer, to break up the cells, and then the virus was extracted. The hair was first carefully clipped off, and the part singed to destroy any outside germs that might exist; then tubes were inserted through the skin into the swellings, and the virus drawn off by suction. The tubes were constructed with a sharp needle point and a bulb, and before insertion were sterilised by heat to prevent the possibility of any other germs remaining in them. The virus is drawn up by suction, the air being exhausted by means of the breath, if the pressure of the virus is not sufficient to drive the liquid up. When the bulbs are filled the tubes are hermetically sealed at one end by means of a spirit lamp, and are ready for transport. A second calf killed, which had also been inoculated on 12th February, was covered with immense swellings on the stomach and sides, and several quarts of virus were obtained from it.

During the course of the proceedings, Dr. Germont explained to those present the effect of the virus and the manner in which to apply it to render inoculation protective. He stated that both these animals killed were inoculated behind the shoulder, which had produced the disease in a severe form, and the virus used was of the third or fourth generation, having been passed through several animals, but it had lost none of its efficacy. Several calves in the yard, he said, had been inoculated with the virus in the tail, and had since been inoculated behind the shoulder, but in no case had any severe sickness resulted. From what could be seen of the cattle upon which experiments had been conducted, it would seem that the scientists had pretty well succeeded in proving that inoculation was a preventive against Pleuro, as the calves which had been inoculated in the tail, and had had the symptomatic fever, were proof against the inoculation of a large quantity of virus behind the shoulder, and after several weeks were in good condition, showing no signs of swelling. The scientists have not succeeded in hitting upon the particular microbe which is really the cause of this disease, but they have found a microbe, and they are now conducting further experiments with a view to proving the practicability of cultivating the virus apart altogether from the living animal, in a medium of broth, in which it is expected to grow and keep

for any length of time. The virus, as procured from the animal, will only keep from fifteen to twenty days. Amongst the first experiments tried by the scientists was the test as to whether or not the virus they had procured was that of true bovine Pleuro-pneumonia. With that end in view, it was tried upon goats, guinea-pigs, and fowls, and proved perfectly innocuous, while upon cattle it produced deadly effects. This was regarded as a certain proof that the lymph of the true Pleuro had been obtained. The virus used was not obtained from the chest or lung, which is the natural seat of the disease, but it appeared to develop, after the inoculation, beneath the skin of the abdomen, and from this part of the animal the virus was obtained which was used for cultivation. According to the stated results of the experiments, the virus appeared to improve after being passed through several animals, becoming purer, and showed more decided effects than when it was first obtained from an animal naturally affected at Tabragalba. As far as the immediate purpose of the experiments was concerned, that of demonstrating the possibility of cultivating the virus in the living animal, they were pronounced by all a decided success.

About noon the Chairman of the Pleuro Board, Mr. E. Palmer, M.L.A., made a short speech, in which he said that the colony of Queensland might be congratulated on having obtained the services of these gentlemen from Europe, and that the Government of Queensland might be congratulated on having given them the opportunity of carrying on the experiments they had been conducting. He would say nothing about the treatment they had received in New South Wales—they had all their own opinion about that; but he believed that when they published their report, every one would be satisfied with the results they had attained. The wealth of the colony consisted in its herds, and nothing would tend to make that wealth more secure than any means which would tend to reduce the mortality from Pleuro. He referred to the deep interest taken by Dr. Germont and M. Loir in the scientific work they had taken in hand, as shown, among other ways, in their turning out in the middle of the night to investigate the condition of the beasts they had been experimenting upon. He expressed the hope that one at least of the scientists would remain to conduct experiments in other matters. Their great master, Pasteur, had been the means of saving millions to the people of the world by the experiments he had conducted, and he felt convinced that the experiments which had been carried out by Dr. Germont and M. Loir would tend to our material welfare by eliminating a disease to which the herds in this district were only too subject. In closing, he hoped that they would be prosperous in their future experiments, and again expressed the hope that one of them might be induced to remain in Queensland.

Dr. Germont, in responding, said that he and his colleague had been very glad to come amongst such kind people, and assured his hearers that his visit to the colony had been a very pleasant one. He was very much pleased to find that the Government were prepared to go to a large expenditure of money to make experiments, and had not stinted them in any way in regard to providing subjects. Many scientists were obliged to stop their experiments for want of the necessary subjects upon which to conduct them; but here they had had a full supply. It would give him very much pleasure to explain to them what had been done. They had been asked to try and make a cultivation of the microbe of Pleuro-pneumonia, so that it would be always ready for inoculation, and so would be fit to travel a long way. Those present knew, of course, that cattle that were travelling were liable to take the disease, and that heavy losses were occasioned thereby. Unfortunately, though the owners knew the value of preventive inoculation, they were unable to get the virus when they wanted it. They had been

asked to make a cultivation of the microbe. That could be done in various ways. They could grow the microbe of the lymph of Pleuro in broth; but for the present they had not succeeded in that way. However, they would be able in a fortnight or so to say whether the microbe on which they were now experimenting was the right one or not. Instead of cultivating in the tube, however, they had principally devoted their attention towards cultivating the virus in the living animal. There was another disease which could not be cultivated in tubes, and that was Cowpox, which was an efficacious preventive against Small-pox. The lymph was, however, cultivated in children, and, as was well known, successive inoculations are made from one child to another. That was something like what they had tried to do in regard to Pleuro-pneumonia. They had succeeded in showing that if they inoculated a calf from a spontaneous case, it would be possible to produce a disease which may be reproduced whenever it might be desirable, simply by inoculation. Starting from the beginning by inoculation under the skin in a vital part, with lymph taken in a spontaneous case, they had produced sufficient Pleuro lymph from a single calf to inoculate some thousands of cattle. It was next important to know how long the lymph could be kept, and they were obliged to try many experiments in that direction. They had inoculated with virus that had been kept seventeen days, and it was virulent enough to kill calves with large swellings. The question now would be asked whether the lymph thus produced by inoculation under the skin is as efficacious for protection against Pleuro as lymph taken from the lung in a spontaneous case of the disease. In order to ascertain this they had inoculated eight calves with this artificially produced lymph—five in the tail and three under the skin in another part of the body. The same day two calves were inoculated in the tail from a spontaneous case of Pleuro, and the whole lot of thus protected calves had since been inoculated again in a vital part with virus from another spontaneous case. Another lot of calves not protected were inoculated in the same manner and with the same virus. The result was that of the unprotected calves three had already died and five were more or less affected, one showing no sign. With regard to the ten calves protected by inoculation, two had slight swellings and the rest were unaffected. In short, of the unprotected animals four out of nine had died, and of a similar number protected, none had really suffered, which was proof that the artificially produced virus was a protection as efficacious as the virus taken in a spontaneous case. Now, how could this knowledge be made available in practice? He would propose that a suitable place should be provided, and a man employed to make successive inoculations of calves in order that a supply of virus might always be ready. A stockowner who wished to protect his cattle would apply to this station, from which a small quantity would be sent to him. With this he would inoculate one or two calves on his station in a vital part, and from the lymph produced from these animals might inoculate many thousands.

Dr. Germont, upon the conclusion of his speech, was loudly cheered by all.

M. Loir also expressed his thanks for the kind manner in which he and Dr. Germont had been treated during their stay in Brisbane.

At the conclusion of the speeches, Dr. Germont gave several experiments to show how inoculation could be effected with the virus contained in the glass tubes. Dr. Germont estimates that enough lymph can be obtained from a single calf, inoculated behind the shoulder, to treat several thousand head of cattle and render them proof against the disease. Every one was greatly interested in the experiments, and Mr. P. R. Gordon was generally thanked for the action he had taken in bringing about these important experiments, and for the invitations he had issued.

The *Brisbane Telegraph*, commenting on these efforts of the French envoys,

says, "The experiments of Dr. Germont and M. Loir, undertaken at the request of the Government with a view to discovering a means of cultivating and preserving the virus for inoculation as a preventive of Pleuro-pneumonia, some of the results of which were publicly witnessed by a number of representative stock-owners and medical gentlemen at Indooroopilly on the 8th instant, must prove of paramount importance to Australia. It is computed that, including the fearful mortality among travelling cattle, fully 10 per cent. of the cattle in Queensland annually succumb to Pleuro-pneumonia during each outbreak in the colony. Assuming the loss, however, to be only half that estimate, we have still a death-rate in our cattle from the disease of a quarter of a million annually, of a value at the lowest computation of £600,000.

"Inoculation has for over a quarter of a century been regarded as a prophylactic of the disease, and no stronger evidence of this can be adduced than the fact that Queensland store cattle, bearing the inoculation ear-mark, realise from 15 to 20 per cent. more in the southern markets than uninoculated cattle. The difficulty hitherto with stock-owners has been to procure a supply of lymph for inoculation until the disease had actually extended to their herds, or until it had approached so near that the probability was the herds had actually become infected. The losses by Pleuro among uninoculated cattle travelling to market have been exceptionally severe. In every instance the owners would gladly have inoculated them before starting on the roads; but here, again, the virus was not available within perhaps some hundreds of miles. Independent of the loss to the owners, the disease has been spread broadcast by travelling stock among the cattle all along their route. By a series of carefully conducted experiments Dr. Germont and M. Loir have conclusively proved that by a very simple process a continuous supply of effective lymph can be kept up by cultivation through living calves, something on the principle on which calf-lymph is cultivated for vaccination for small-pox. All that is required is a central station at which a constant cultivation can be kept up. From this station a very small supply can be forwarded by post, in sterilised tubes, to the uttermost part of the colony. A few drops of this lymph inserted under the skin on one side of a calf will, in the course of three weeks, provide a supply of pure lymph sufficient to inoculate from two to three thousand head of cattle. In the course of these experiments and by close observation the scientists have proved that the lymph produced by inoculation is purer and equally as virulent as that taken from an animal that has contracted the disease in the natural course, and that it loses none of its virulence by being passed through several calves in succession, the fourth cultivation, so to speak, being equally as effective as that from the first calf inoculated from the naturally contracted disease.

"To set at rest all doubts as to whether the disease set up artificially by inoculation is that of true bovine Pleuro-pneumonia, the scientists injected a similar quantity of the same lymph which produced death in calves into the blood of goats, guinea-pigs, and fowls without producing any results, and to test the value of inoculation in the tail as a prophylactic, ten cattle were so inoculated with cultivated virus, and two with virus taken from a bullock suffering from the disease contracted in the usual way. These cattle were closely watched, their temperatures being daily registered. When they had fully recovered from the effects of this inoculation they were reinoculated under the skin, behind the shoulder, and at the same time a number of unprotected calves were inoculated in the same place and with an equal quantity of the same virus. The results were that two of the protected ones showed a very slight enlargement where the skin had been punctured; beyond this the inoculation had no effect; whereas a majority of the unprotected ones had died before the 8th, and we are informed that

several have since died from the effects of the inoculation. No stronger proof could be produced of the complete success of the experiments. During the progress of the above experiments the scientists have been giving close attention to the discovery of the particular microbe which causes this disease. They have discovered a microbe, but, as Dr. Germont explained, it will take several other experiments and very close observation to determine whether or not it is the microbe of Pleuro-pneumonia. Should they succeed in discovering the microbe of Pleuro, lymph for inoculation that will keep active for all time can then be cultivated 'by the ton,' as the doctor expresses it, in broth or other media, in the laboratory, quite apart from the living animal. Our stock-owners may rest assured that the work so successfully begun by Dr. Germont and M. Loir will not end with the Indooroopilly experiments, but that it will be taken up by the great French scientist Pasteur himself; and if so, judging from his past investigations in bacteriology, failure with him will be an almost impossibility."

VISIT OF THE DUKE OF CAMBRIDGE TO THE ROYAL HORSE INFIRMARY, WOOLWICH.

On April 29th, his Royal Highness the Commander-in-Chief, accompanied by Lord Wolseley, Major-General Sir Redvers Buller, the Principal Veterinary Surgeon, and other members of the head-quarters and garrison staff, visited the Royal Horse Infirmary, for the purpose of inspecting the horses more recently operated upon for Roaring. Those fit for testing, twenty-one in number, and which had been operated on since February of this year, were subjected to a very severe ordeal in the form of long and rapid galloping. His Royal Highness was so well pleased with the result that he desired the Principal Veterinary Surgeon to explain to him the pathology of the condition and the mode of performing the operation. All this was demonstrated on a larynx. He afterwards wished to see a horse put under chloroform, which was done by Veterinary Surgeon F. Raymond, the time occupied being a few seconds over a minute, and the quantity of chloroform being only an ounce. Subsequently H.R.H. was pleased to express his gratification with what he had witnessed, and to say that he was strongly inclined to agree with the Principal Veterinary Surgeon as to the value of the operation for Roaring, and to hope that a considerable number of the horses operated on would be cured permanently.

THE FELLOWSHIP DEGREE OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

On April 24th, the following members of the profession successfully passed the prescribed examination for the Fellowship Degree: J. E. Peele, Durham; J. G. Parr, Leicester; G. T. Pickering, York; R. C. Irving, Birmingham; D. M. Storrar, Abergavenny.

The following were the questions in the written examination:—

Comparative Anatomy and Physiology.

1. Describe the nature of the Respiratory Process in Animals, and state how the organs by which it is conducted are arranged in Mammals, Birds, Reptiles, and Fishes.

2. What is the period of Gestation in the Mare, Cow, Ewe, Sow, and Bitch? Describe the Structure and Form of the Placenta in each.

3. What is Urea? State what you know about its formation in the body, and how its amount may be increased or decreased by food and exercise.

4. What is meant by Arterial Pressure? State what you know of the influence exerted on it by the Nervous System.

5. Describe the structure of a Capillary Blood-vessel, and state the conditions which modify the Capillary Circulation in any part or organ.

6. What is meant by Reflex Action? Give an example, and mention the course by which the Afferent and Efferent impulses are conveyed.

(Four of these six questions to be answered.)

Therapeutics.

1. What are the Indications and Counter-indications as to the use of Opium in the Treatment of Disease?

2. What are the Physiological Actions of Cocaine? State for what purpose it might be used in Veterinary Practice.

3. Describe the Physiological Actions of Ether and Alcohol, and state under what circumstances they may be used in Veterinary Medicine.

(Two of these three questions to be answered.)

Veterinary Medicine and Surgery.

1. Describe the Suppurative Process from the initial stage, and define the conditions which are essential to its completion.

2. What are the symptoms of Nephritis in the Horse? What Treatment should be adopted?

3. Under what circumstances does Mammitis occur in the Cow and Ewe? What are the Terminations of the Disease, and what Treatment should be pursued in the several stages?

Pathology.

1. Describe the differences between Puerperal, Milk, or Parturient Fever, and Parturient Apoplexy, and give the Pathology of these conditions.

2. Describe the Pathology of Tuberculosis.

Veterinary Police.

1. Under what conditions may Rabies become Epizoötic?

2. May Tuberculosis be considered an Epizoötic disease? and if so, how is it disseminated?

ON THE LATELY DEMONSTRATED BLOOD-CONTAMINATION AND INFECTIVE DISEASE OF THE RAT AND OF EQUINES IN INDIA.

BY H. VANDYKE CARTER, M.D.LOND., BRIGADE SURGEON, BOMBAY.

(Continued from page 346.)

In most of these instances details of experiment are given sufficient to show that adequate precautions against error were duly practised; seemingly the results were never of a doubtful character; and lastly, it would appear that the inoculation experiments were invariably successful, so far as concerns repetition of the blood-organisms. As regards identity of the morbid state induced with that naturally acquired, not less ample proof is afforded in the instance of the horse and mule (see Appendices D, E, F, and G of Dr. Evans's Report); and Mr. Steel, in reply to some questions of mine, explicitly states of his experiments that "the phenomena induced by inoculation were those of 'Surra,'" and "all inoculated animals died of 'Surra' pure and simple, with the exception of one case, in which pyæmic complications"

ensued some days before death. According to these data, which, if not numerous, are still decided and clear, it would follow, first, that both visible blood-contamination and a certain group of symptoms are transmissible by artificial means from the diseased equine to healthy ones of the same species; and secondly, that a similarly contaminated state of the blood may be transmitted from the "Surra" equine to the dog and monkey. That to these non-equine animals, however, the "Surra" disease had always been simultaneously communicated, is not so clear, for the records bearing on this important point seem too few and incomplete to be quite convincing. Thus, while the two dogs inoculated by Dr. Evans both showed on the 11th day a kind of leukhæmia (and one the hæmatozoon scantily), with pallor and emaciation, yet there was no jaundice or petechial rash; and moreover, a sucking pup, which on several occasions displayed abundant blood-organisms, continued in good health for at least 18 days. The dog, too, inoculated by Mr. Gunn did not for days or probably weeks show any signs of illness, whilst the blood contained active monads. Continuous records are, however, wanting, and the end was not known. The two positive data of Mr. Steel include, first, a young dog both inoculated and fed on tainted mule's flesh; organisms seen in blood on 12th day, but no signs of general disorder until the 16th, when and after the animal was dull, feverish, with very pallid conjunctivæ, a slight cough and tenderness in the loins, appetite capricious, many parasites in the blood at times; 28 days later there were noticed fever, emaciation, with glandular swellings on each side of the head and in the left groin, with a state of general tenderness; in the blood many disintegrated corpuscles, but no parasites; the buboes increased, œdema of the lower limbs, with persistent fever and tendency to collapse, death ensuing on the 51st day after inoculation. The autopsy was made too late for useful results. Next, a monkey had a syringeful of tainted mule's blood injected beneath the skin of the thigh; 3 days afterwards high fever and organisms in the blood, which lasted 4 days, subsiding on the 5th, but recurring after an interval of 4 days; and subsequently other febrile recurrences (parasites seen after a month), with emaciation and debility, feebleness in the limbs, ulcers and necrosis of the bones of the feet, and final exhaustion upwards of two months after inoculation; at the autopsy no marked positive changes, only some petechiæ on surface of lungs. This animal was brought from Rangoon to Madras during its illness, and may have suffered, as monkeys often do, from confinement and the voyage; its temperature chart for 30 days is given by Mr. Steel, blood-scrutinies being made for 13 days in succession at first, and again later on.

Some other inferences from the records, as they stand, are the following: Incubation period after inoculation, varied as to the subject, being in the horse 4—6 days, in the mule 4—10 days, in the dog 11 or 12 days, in the monkey about 3 days; also varied as to the method of infection, being shortest after intra-venous injection and subcutaneous inoculation, and somewhat delayed after simple ingestion of the tainted blood given in quantity. Sometimes a depression of temperature occurred during this period. A local swelling might or might not follow the hypodermic operation. There was one successful infection of a mule with blood taken from a mule naturally diseased, but not at the time of experiment showing the parasite in its fresh state; organisms appeared in the subject on the 10th day, along with pyrexia high and intermitting, and subsequently death on the 40th day. Mr. Steel thinks it possible that in stained preparations of the inoculating material some evidence of the presence of the hæmatozoon might have been seen. Dr. Evans found that when the tainted horse-blood was freely diluted with water the organisms had disappeared after 24 hours, and this mixture proved innocuous to two healthy horses when administered by mouth; and

Mr. Steel ascertained that thoroughly dried tainted mule's blood was inoperative on inoculation. A fatal result seems always to have ensued in watched animals—amongst equines in 5—7 weeks; a dog lived 7½ weeks, a monkey over two months; the *post-mortem* appearances being occasionally recorded as not essentially peculiar. Second or successive series of inoculations from the first individual were not apparently attempted. Mr. Steel's essays include an unsuccessful administration of gastric and intestinal contents of tainted mule per mouth to a healthy animal; also unsuccessful inoculation-experiments (three) on an Amrut bullock, old and emaciated; and similar unsuccessful inoculations on a young goat (three), the animal becoming, however, much emaciated, in spite of good feeding and voracious appetite, after the last essay.

The last part of my notes refers to the probable nature and analogues of this blood-parasite and to the character and affinities of the equine "Surra" disease.

As regards the hæmatozoon, minute elongated bodies, of simple homogeneous structure and provided with cilia or a flagellum, might, I suppose, be regarded as either bacterial or infusorial forms, or less probably as zoospores, or possibly as embryos of nemat helminths. Other analogues may exist.*

Comparison with the immature young of nematode worms is alluded to, because it happens that Dr. Evans once found numerous embryos of a filaria in the blood of a camel in bad health and associated with four other camels affected with genuine "Surra;" and Mr. Steel also detected in the blood of a mule under experiment a nematode "worm;" the hæmatozoon under notice being, however, absent in both these instances. I never met with blood-filariæ in the rat, nor had Dr. Lewis. Micro-filariæ commonly present characters wholly diverse, being much larger in dimensions, cylindrical or vermiform, nonflagellate, of granular aspect or showing traces of internal organs, and sometimes enclosed within a delicate sheath; besides, the direction of movement is not uniform, and it has not been shown that these temporary tenants of the blood can be reproduced through inoculation.

As to comparison with spermatic elements, the late Dr. Lewis observed (in his second Memoir) that he was once inclined to think that the flagellated organisms of the rat might be the spermatozoa of some parasite hidden in the tissues of the animal, mentioning their amazing similarity to the spermatozoids of a tænia seen in the intestines of a rat, whose blood, however, was at the time free from organisms. The lateral membrane of the hæmatozoon would also call to mind the similar appendage of spermatic filaments perhaps elsewhere present than in certain lizards. But all such filaments move the thick end foremost, their flagellum being a propeller; and besides, they are not independent organisms capable of reproduction *per se*.

The bacterial character of these blood-parasites is disproved by their non-cellular aspect and by their contractile plasma, in which rapid changes of length and thickness are seen wholly unknown amongst the algoid filaments; moreover, their prompt decay after a few hours' keeping, with entire absence of signs of reproduction by division or spores, would negative such view. Perhaps the nearest approach to resemblance would be with the spirillum (or spirochæta) of human Relapsing Fever, which I mention because it has been

* I had purposely omitted in the text any allusion to the so-termed "hæmatozoa of malaria," which, after Dr. Laveran and others, have been recently recognised by Prof. W. Osler, and by him are in a certain sense associated with the organisms of "Surra" equines and of the rat. This omission was due to the absence of a personal knowledge of the blood-parasites often present in the febrile human subject; and having, since the text was despatched from Bombay, acquired some practical information here, I hope to be allowed to make good the defect in a later note below.

alluded to by several observers as regards appearances in the fresh blood of rats and equines, and has in the latter instance led to the organisms being designated as "spirilloids;" Mr. Steel's term seeming the more warrantable, since he found a distinctly recurring pyrexia to attend the presence of the organisms in mules and in animals infected from them. I could myself compare directly the living human parasite with that of the rat, finding no other than an incidental similarity in a peculiar twirling displacement of the red blood-discs, caused by movements of the active organisms present; watching for a time, indeed, both kinds of organisms ceased to move, and becoming rigid, drifted away towards the sides of the containing cell, when all resemblance ended, the spirochæta retaining its spiral form, speedily enlarging much and joining with other filaments to form a close network which at its nodes finally blends into a uniform, granular, zoogloea-like clump. The contrast here, even so far, with what has been described above of the rat organisms is sufficiently marked to indicate an essential difference in their nature, there being manifest, under similar conditions, a distinct tendency of the bacterium towards a certain development, and not so of the hæmatozoon. I might add that it is only when the *Spirochæta Obermeieri* in its most active state is, as it were, uncurled and variously twisting that it could be mistaken for the *monad*, since when more tranquil it appears as a much slenderer, shorter, and quite uniform spiral thread, darting indifferently backwards or forwards, and showing no flagellum at either of its equally obtuse ends. I also note that though morphologically apart, there sometimes obtains (*e.g.*, as regards the "Surra" organism) a biological resemblance—that, namely, of reproduction through inoculation; but such faculty manifestly pertains to both protophyta and protozoa.

As Anthrax in horses is said to be frequent in India, and sometimes liable to be confounded with the "Surra" disease, it may be worth pointing out that the *Bacillus anthracis* has in fresh blood the aspect of delicate homogeneous rods, either straight or slightly curved, with parallel sides and flattened ends; and often joining, as regards mere length as well as breadth they might compare with the "Surra" organism, whilst, on the other hand, their perfect quiescence alone would be distinctive. Inside the body after death, and outside at ordinary temperatures, the rods readily grow and produce their spores.

There now remains a possible identification of the blood parasite under review with organisms of the sub-kingdom Protozoa, forms of which are known to flourish in fluid media of animals with hardly more access of oxygen than obtains in the blood; and it would be with such directly nourished parasitic species, since a differentiation of integument and contents, nucleus or vacuole, mouth or anus, cannot here be made with certainty. Following Leuckart ("The Parasites of Man," translated by Mr. Hoyle, 1886), the identification then might be in advance of the rhizopods and sporoza (coccidial forms of which may be seen in the rat's liver), and rather with the class of Infusoria, its order Flagellata—the flagellum being always confined to the anterior or oral extremity; next, particularly with the simpler Monad family, including the genera Ceromonas (with numerous free living species) and Trichomonas, which is wholly parasitic in the higher and lower animals, and is characterised by an oval body provided not only with a flagellum, but also with a longitudinal fringe. Thus, without my being in a position to criticise further, the view of Dr. E. M. Crookshank seems reasonable (*l.c.*), namely, that the organism in question may be relegated to this already-recognised genus—its sub-genus *Trichomonas sanguinis*, without resorting to the new terms Herpeto-monas (Kent) or Hæmato-monas (Mitrophanow).

I am aware of certain objections to the view above proposed, and doubtless a decision of this sort is always open to revision; yet in connection therewith,

as bearing on assigned or possible sources of the parasite-contamination, it seems worth adding (from Leuckart) that these monads commonly live on putrefying substances, and are often found in countless numbers in water or in living animals, *e.g.*, the large intestine of frogs and toads, the paunch of ruminants, and cæcum of pig; also in the genital canals of the snail, the body-cavity of rotifers, the alimentary canal of millepedes and insects, being occasionally so frequent (especially in moths and flies) that whole tracts of the intestine are filled with them.

In the same connection I would here allude to the evident narrow place, limitation, or "endemicity" of both rat-infection and the "Surra" disease, with probably also a distinct "seasonal" variation of prevalence. Strict search on the lines now indicated seems to me promising as regards detection of the source or sources of these infections.

An external origin of the parasite, direct or mediate, being in high degree probable, regarding its mode of entry into the circulation, the successful experiments of veterinary officers proving that the "Surra" infection is directly communicable by way of the stomach, have an obvious practical bearing; and so, too, the equally prompt success of hypodermic inoculation, which shows the sufficiency of minute wounds of the skin and, presumedly, of the mucous membranes generally, as a favouring local condition. The apparent absence of conveyance of the same morbid state through mere skin-contact, and through air-infection by way of the respiratory tract, should also be considered. It is not known if rats inhabiting the stables of infected horses or mules are primarily or specially affected; but Mr. Steel's negative experiments, quoted above, would tend to show that equines did not derive their disease from the bite of tainted rodents. The hæmatozoon of the rat seems more difficult of communication than the "Surra" monad, yet I have shown that it or its germs may be introduced into the circulation, *e.g.*, of the monkey, by way of the peritoneal lymph-sac; my own impression from the data (see above) being that a certain limited development had taken place in the monkey's blood, though this is uncertain, since entire blood-discs, while preserving their vital properties, can pass freely along the same lymph-channel (Dr. W. Murray, in the *Brit. Med. Jour.*, 29th Jan., 1887), and such are broader and less mobile structures than the full-grown parasite in question. Another conjecture arose from my finding in some rats, at the lower part of the ileum, many active monads apparently identical with species of Cercomonas, and in the duodenum, amidst bile-stained mucus, numerous larger ones resembling Trichomonas *sp.*, whose proximity to the common bile-duct suggested the possibility of entry into the liver (where C. has been met with), and thence into the circulation. As it happened there were no organisms in the blood of these rats, further remarks would be merely speculative; and I need only add that the concurrence of extraneous, intestinal, and blood monads, with a conceivable connection of the series, *inter se*, forms a topic analogous to that of such bacterial infection as the "spirillar," of human Relapsing Fever elsewhere alluded to by me.

Equally cursory in the scarcity of relevant facts must be any comment on the growth and reproduction of this hæmatozoon. The parasitic habit might be expected to modify these processes, as it does mere structure. According to Leuckart, the flagellate monads commonly are reproduced by division (longitudinally), or by conjugation, encystation, and the formation of countless spores possessed of much tenacity of life; and in individual cases there has been seen a quiescent state, leading to the production of abundant minute swarm-spores. Here what is known is, first, the co-presence in the blood with abounding grown organisms, sometimes clustering or blending, of numerous small motile particles and frequent cyst-like forms which have the aspect, at least, of reproductive elements at various stages of development,

and which nearly all observers have noted (see Dr. Crookshank's figures and some of mine); add also that whilst obviously plentiful growth must take place somewhere in the rat and horse's body, hitherto outside the blood no parent-source of the parasite has been detected. Mr. Steel's successful inoculation with fresh blood, in which at the time no parasites were detectable, is quite noteworthy, and corresponds with some experience of mine when studying the Relapsing Fever of man, the explanation being either that grown organisms had (as is possible) been overlooked, or that the new brood had sprung from germs contained in the blood (as also seemed likely in one of my cases). The second point to note is concurrent testimony regarding the advent of the hæmatozoon by intermittent succession of broods. I had not actually seen this in the rat, but apparently it was so in a healthy-looking dog in the possession of Dr. Lewis; and as regards the "Surra" infection, Dr. Evans had noticed its probability, whilst Mr. Steel has furnished definite affirmative evidence in both natural and imparted disease. Analogous thereto are the events in the human recurrent spirillar infection; only here the malady tends to subside by diminution and delay of the relapses, whilst Equine Relapsing Fever seems always to end fatally. Whatever prove the future explanation of this significant phenomenon, it will apply to both these kinds of blood-infection, and may apply also to the malarial, typhoid, and certain septic species. Lastly, I have to notice the fact that, so far as known, the hæmatozoon is not only limited to the blood-area, but is equally diffused throughout it, and the same datum was clearly ascertained for the spirillum of Relapsing Fever, by comparative scrutinies of blood taken immediately after death (of infected monkey) from each of the principal regions and viscera of the body.

Before quitting this part of the subject, there might be mentioned certain seeming counterfacts to some of the propositions above surmised. Thus, as regards the evanescent quality of the hæmatozoon, this would appear less marked than is stated of monads generally, Lewis in particular having remarked that the rat's organism was not very sensitive to the action of mercuric perchloride, whilst according to Leuckart this salt has in general such a prompt destructive action that its employment therapeutically seems to be indicated. Again, Mr. Steel once failed to propagate the "Surra" disease by administration *per oram* of the gastric and intestinal matters of a diseased mule; and further, what seems adverse to the asserted persistency of monad-germs, the subcutaneous injection of dried tainted blood also failed. Dr. Evans, too, found on two trials no effect after the swallowing of a water-mixture containing infected blood which had been kept for twenty-four hours and without signs of putridity no longer showed traces of the parasitic organisms. Analogous hereto was the failure at my hands of dried spirillum-blood to infect, although traces of that bacterium could be seen in the material used; and this circumstance induces me to remark, briefly, that the conditions of infection must really be complex, since three separate factors are necessarily concerned; namely, (1) a certain state of the infecting agent, (2) a certain mode of transmission, and (3) a certain state of recipient or new host.

The final topic I propose to glance at is the character and affinities of the equine disease which is associated with the hæmatozoon under review. The excellent descriptions published of "Surra" as prevalent at the east and west extremes of India, do not differ more than might be anticipated from innate variability and incidental circumstance. From them it may be gathered that here is a sub-acute, febrile, and usually fatal malady, presenting no other special lesion than that of the blood, arising endemically, and not spreading by contagion or infection; commonest during and after the rainy season, with no other particular relation to atmospheric states or to the soil: in a given

locality the distribution of disease may be irregular, and the outbreaks do not seem to last longer than a few seasons at a time, sporadic cases probably persisting or being introduced afresh. The entire clinical history is not fully known, on account of the non-continuous course of symptoms: at first were noticed fever, with jaundice, petechiæ of visible mucous membranes (eye and vagina), anasarca, sometimes albuminuria, always great prostration of strength and rapid wasting; death by exhaustion alone at the end of a few weeks; and at autopsy no specific coarse lesion seen (Evans). Afterwards it was clearly made out that the pyrexia assumes the form of pronounced (max. t. 105°-7° F.) and well-defined exacerbations of 2 to 7 days' duration, which are separated by apyretic intervals lasting about as long—the first incubation period experimentally learnt being 4 to 7 days; and it is only during these successive "relapses" that the hepatic derangements and blood extravasations become prominent; thrombosis and embolisms may occur; anæmia is very marked (Steel). The duration of the disease, so far as ascertained, varies from about two months to perhaps a year; a long latency of the malady seems improbable (Evans); artificially induced disease may end acutely in twenty-one days or in a month or so (Steel). There are clinical modifications which need not be discussed here; antecedents and sequelæ are not fully made out. The mortality-rate is extremely high, recoveries being apparently unknown. Anatomical lesions seem to be connected with the morbid blood-state, and include localised hyperæmias of the intestinal mucosa, in the stomach sometimes stasis and sphacelus; petechial extravasations; serous and gelatinoid effusions in lymphatic areas, with occasional glandular intumescence; granular and fatty degeneration of solid tissues. The diagnosis of this disease is wholly due to the labour of sagacious experts; by means of the thermometer the characteristic febrile relapses can be ascertained, and by the microscope the pathognomonic aspect of the blood (see below); a period of ten days' watching may, however, be needful for certainty. In "Anthrax" the temperature is persistently high and the blood contains bacilli, and in nine cases out of ten this disease is of acute character, whereas in "Surra" the malady is more chronic, the pyrexia intermittent, and the blood then charged with "spirilloids" (Steel). Prognosis is unfavourable in the highest degree; and treatment, both general and special, having hitherto proved inefficacious, attention needs be directed to prophylactic and preventive measures.

As to etiology, it is stated that though new to science, "Surra" has long been recognised in its haunts, where as a rule enzootic it does sometimes assume an epizootic character (Evans). Adequately sustained inquiry made on the spot, concerning the predisposing and determining causes of the disease, is still a desideratum; only occasional and non-exclusive conditions, chiefly of mal-nutrition or mal-sanitation, being as yet elicited, there remains to note such more direct agencies as in the popular opinion produce this disease; *e.g.*, the bite of a large brown fly the size of a small bee (classification unknown), the feeding on certain kinds of grass, and the drinking of fouled, stagnant, marshy water, as mentioned by Dr. Evans, who himself found flukes in the liver of two "Surra" cases examined *post mortem*. The Indian veterinary observers seem unanimously disposed to regard the hæmatozoon as the immediate cause of the disease, the arguments put forth in support of such view being those held in analogous instances; *e.g.*, the spirillum fever, and also like, but more elaborately conclusive, in the Anthrax infection; it is asserted that this organism is never found in healthy equines *(a)*, that it is invariably present in the diseased *(b)*, and that its occurrence is peculiar to the diseased *(c)*; further, there is, in the mule at least, the closest connection in time between its usual visible advent and the onset of febrile symptoms, with the additional feature of disappearance of the blood-organism just before

the acme and decline of specific pyrexia (Steel); and again during the apyretic interval ensuing, it is said that immature growing forms of the parasite are with little difficulty detectable (Mr. Gunn, A.V.D.); lastly, the absence of a strict relationship between the apparent number of organisms and the intensity of clinical symptoms would be no valid argument against a real connection here, because such symptoms are really complex phenomena, referable to a conjunction of influences and conditions. Judging from all the data, there is, I may add, ample evidence to warrant the assumption that the natural equine disease scrutinised by Dr. Evans and Messrs. Steel and Gunn was one and the same.

The remarkable fact that "Surra" is communicable by inoculation, and even by imbibition of the tainted blood, was determined promptly by its sagacious discoverer, and has been fully confirmed by the next observer, whose more elaborated data are worthy of close attention. Mr. Steel has published three separate accounts, with charts, of inoculated mules and one of the pony, which on comparison with others of the natural mule-disease appear so much alike as, in my opinion, to quite justify his statement that the "Surra" blood-infection, with all its attendants, can be readily, exactly, and exclusively reproduced at will. I am assured that adequate precautions were taken to ensure the absence of a natural acquirement of the disease in these several instances, which therefore, along with Dr. Evans's experiments, will serve to establish a truly fundamental datum.

To myself these observations were of particular interest, because of the aggregate clinical and pathological facts embodied in them demonstrating, further, a striking similarity to the phenomena of the spirillum-infection, with its attendants, as seen in the human subject. This similarity Mr. Steel has the credit of first clearly making evident, whether or not in veterinary medicine his proposed cognomen of "Equine Relapsing Fever" displace the indigenous term "Surra:" briefly, it consists (as regards inoculated cases) in the defined and but little shorter incubation-period of 4 to 7 days, with no marked general symptoms and no visible blood-contamination; then follows a succession of pronounced and defined pyretic and apyretic (incubatory) periods, of which two to six are shown in the charts, and during which characteristic signs of illness and blood-tainting regularly alternate with abatement of symptoms and disappearance of the hæmatozoon; after death the lesions found, so far as I perceive, being solely those of blood-deterioration, without the marks of local inflammation or other organic processes, either primary or in themselves sufficiently marked to account for disease. The differences here, which I note, concern details in the course of the pyretic events; these in three of the cases being, if equally pronounced, hardly so defined (*e.g.*, rigors and sweats not named) or so clearly separated by apyrexial days as is usual in the human disease; the point not, however, being wholly material, since fatal cases of Relapsing Fever and other specific infections of man are very apt to be irregular in their course: in the longest surviving of Mr. Steel's mules, where death occurred from an incidental internal embolism, the relapses were better marked, and from this instance it is learnt that the equine infection manifests no such tendency to decline by a deferring and shortening of the febrile attacks, as is manifested in the human infection; thus the mule's series shows a succession of febrile events lasting 7, 3, 4, 3, 4, 6 days, with apyretic intervals of a much shorter and not lengthening succession of 3, 2, 2, 3, 2 days' duration: add to these data the commonly larger number of relapses (17 have been counted), and it will become evident that the Relapsing Fever of equines is, comparatively, much the more prolonged, intense, and intrinsically exhausting; indeed, so far from possessing a spontaneously abating tendency, once supervening, it never departs until life itself ceases, and this, happily, is not the case with

tine spirillum-fever of man. Respecting the more prolonged illnesses naturally acquired precise information is as yet but scanty, consisting of three cases given by Dr. Evans, in which the animals were destroyed, and of six examples detailed by Mr. Steel, in which natural demise occurred; of these last three had been first entered under a provisional diagnosis of "Gastric Typhoid" (in allusion to the gastric ulcers sometimes found in Burma cases), dying on the 53rd, 59th, and 93rd day of disease respectively, so far as ascertained; and as the blood-parasites were present in all, there is here, too, evidence of the much longer persistence of the infection than ever was learnt by me as regards the human spirillum-fever. What may be the precise state of the blood and viscera in cases of "Surra" lingering for six or twelve months does not appear to be ascertained; nor apparently have recoveries been ever watched throughout, and hence the question of immunity or of an increased liability cannot yet be raised. It is well known that no immunity against reinfection is imparted by an attack of "spirillum-fever."

As to the character of the disease inoculable in animals of different species from the equines and man respectively, available data are but few. I found the spirillum-infection to be communicable only to a quadrumanous animal, in which the blood-parasites, with their clinical attendants, are even readily reproduced, and, as sometimes happens in the human subject, the first outbreak of illness may prove fatal; it being also remarkable that after the more usual event of recovery, relapses were extremely rare (if ever occurring) in the monkey. As regards the equine disease, Mr. Steel succeeded on first attempt in similarly communicating this to a monkey of probably similar species, whose chart shows the animal to have at first and for 30 days at least truly acquired the specific recurring fever; numerous later relapses are also said to have occurred, but the state of the blood is not recorded, and the monkey died after two months or more with the complication of ulcers and necrosis of the foot, so that possibly (in my opinion) septicæmia had finally supervened, and other data for comparison are desirable. Adverting, next, to disease artificially induced in the dog, a notable divergence of results becomes evident; for whilst, like others, I failed to communicate the spirillum-infection from man to the healthy common dog, yet three veterinary surgeons have readily transmitted the equine "Surra" infection to dogs whose blood was, in two instances at least, previously ascertained to be free from the parasites. From these data it appears that a healthy pup, infected, probably by the mouth, on or about 5th October, 1880, early showed abundant blood-contamination (Evans), which was again seen at intervals until 3rd November; shortly after this the puppy got the "distemper," and by an injury lost the use of an eye; its blood, however, was free from organisms on 15th January, 1881, 12th and 28th February, and so late as 24th March (Lewis, second Memoir), the general condition and ultimate fate of the animal being unknown. Mr. Gunn inoculated a dog on 20th September, 1886, and on 24th found many parasites in its blood; the animal after that date, for a period not stated, continued playful and healthy-looking, nose cold, but yet the blood was "crowded more or less with the special organisms, more or less numerous as indicated by the internal temperature;" this observer inferring that an "animal may be apparently quite healthy, and yet have the disease in his system." Adverting, lastly, to the more precise experiment of Mr. Steel, there is the chart and history of a young dog inoculated and given tainted mule's flesh to eat on 13th January, 1881: blood-parasite first seen on the 24th, and on 28th animal dull, had slight cough, and exhibited pain when pressed on the loins; she was very feverish while the blood contained parasites, and the conjunctivæ became pale in the extreme; she was allowed to eat portions of all the mules which died, but her appetite became very capricious. On 25th February the animal was found very dull, feverish, and thin, with a swelling on each side of the head,

also the left inguinal glands swollen, and the body in general so tender that the animal shrieked when lifted from the ground; in the blood no parasite seen, but many disintegrated corpuscles; the glandular swellings increased, and then soon appeared œdema of the perineum, turgescence of the throat and muzzle, extreme prostration, swelling of the hind quarters, coldness of the body, and death on 4th March (fifty-one days after first inoculation); the chart given showing, first, a series of six or seven distinct febrile exacerbations of 3 to 5 days' duration, and separated by brief apyretic intervals of 2 to 4 days' duration, but afterwards displaying more irregularities with days of great depression of temperature. Upon inquiry of Mr. Steel, I learn his opinion that here, as in the monkey (which died with similar sequelar signs of septic infection), the later illness was really part of the "Surra" disease pure and simple; autopsy of the dog was made too late to be of real value.

According to the above comparative data, the "Surra" infection, like the "spirillar," is readily implanted in the monkey, whilst retaining much of its superior gravity, both instances, however, showing a certain diminution of degree in this transfer. As regards the dog, in which the spirillar contagion is wholly inefficacious, if the first-named results be regarded apart, the case becomes analogous to that of my experimental monkey inoculated with the rat's organism, in so far as showing that the mere presence of the active monads did not induce palpable morbid signs; but the last result indicates, at least, that before deciding on the real effect of the "Surra" inoculation precise and prolonged observations should be made. Viewing the whole series together, it seems legitimate to infer that the "Surra" infection admits of considerably wide limits of intensity, and this independently of the visible quantity of organisms, so far as may be judged from statements of observers; being in some instances (as in equines) almost inevitably fatal, in others (as in the monkey) less immediately so, and lastly, in the dog not necessarily occasioning early serious illness.

In the course of comparing phenomena I have noted as a similarity of the equine to the human Relapsing Fever the occurrence of a ravenous appetite in the sick during even the febrile state, and without much manifest benefit when gratified; also a tendency to intensifying of symptoms (*e.g.*, the jaundice and petechiæ) at the acme of the successive febrile events, according to Mr. Steel, who seems to refer to a clustering of the organisms at this time such as I had connected with incipient sporing of the human blood-spirillum then. The remarkable tendency of the pathogenous flagellated organisms to attach themselves to or attack the red blood-discs is insisted on, even a disintegration of the corpuscles being thus imagined possible; such tendency is apparent in the organisms of the rat's blood, without seeming so peculiar, and in less degree it is notable of the fever-spirillum in man. Coarse deterioration of the blood is not apparent in the rat, and not marked in equines nearly so much as in Anthrax; it is little evident in spirillum-fever; minuter changes in "Surra" are expressly stated to follow the advent of the parasite, and to consist of increase of white cells, diminution of the red, with an appearance of granular specks in the serum (Evans). If the parasite be viewed as the immediate infecting agent, there becomes evident a similarity of equine to human fever-blood, in so far that loss of infecting power ensues on desiccation; but, on the other hand, a contrast with Anthrax as regards ingested blood, since in order to infect this must contain spores of the bacillus, whilst germs of the monad will either not suffice or perish far sooner, as Dr. Evans's experiment shows. "Surra" organisms (or the spirillar) were not found in the secreta or excreta, though lately quiescent monad-parasites have, it is said, been detected in the urine during apyretic intervals (Gunn); Anthrax-bacilli are to be seen in bile, milk, and the urine during illness. Transmission of each of these infections to the fœtus seems to be an uncertain datum; the ready

communicability of Anthrax and spirillum infection to man appears in marked contrast to the non-communicability of the monad-infection, so far as known (Steel). It is worth adding that the site of successful inoculation of virus in all three cases may present no sign of local irritation; whilst after unsuccessful attempts local swelling may follow, not necessarily suppurating; such were also noted in unaffected ruminants after "Surra" inoculation (Steel); they were not observed after use of tainted rat's blood.

For some other comparative points of interest reference must be made to the following paragraph, and my work on "Spirillum-fever" would also afford some aid in following out details:—

"Amidst the obscurity surrounding a new disease, as yet but imperfectly investigated, it would be warrantable to seek for light by way of analogy with better-known diseases of the same class; and the search would be more encouraging if there were available a satisfactory standard or type to which to refer. Such a type exists in Anthrax, the history of which is full of applications to the case in hand. (See 'Leçons sur le Charbon, par Dr. J. Strauss,' in *Le Progrès Médical*, 1886-87.) Thus, as to general features, Anthrax may affect equines on a large scale, preserving there the characters it displays in bovines and sheep, its commoner victims; it also is distributed endemically, being of telluric, though not of miasmatic origin; and its severity is hardly less than that of 'Surra.' Next, as to clinical and anatomical diagnosis, 'Anthrax Fever' is the common natural form of the infection, in which the temperature may reach 105°—108° F., being attended with chills and sweats, restlessness, distress, troubles of the circulation, exhaustion, stupor, convulsions, and coma; these symptoms extending over 12—24 hours, or sooner ending fatally in young and plethoric subjects; after death the blood is found and remains black, all the internal organs are deeply congested, with ecchymosis in the intestinal canal and stomach and occasional local sphacelus; the lymphatic glands are implicated, and in the horse the superficial and deep connective tissue shows gelatiniform infiltration; the scanty urine and stools may be bloody. The characteristic bacillar aspect of the blood in this disease was but very gradually discriminated. The causation of the malady was for long attributed to collateral conditions—non-sanitary of all kinds, foul emanations, peculiarities of soil (marshy), and combinations of general agencies leading to the view of its spontaneous origin; the special operation of flies (unarmed) on excoriated surfaces was determined by experiment, and it was soon learnt that the disease is communicable by even slight inoculations, though neither contagious nor infectious in the ordinary sense. Rats are with difficulty inoculated, and dogs do not suffer on drinking tainted blood, but the well-known experiments with cultivated bacilli demonstrate that the apparent immunity of some species of animals is in high degree contingent. One attack of Anthrax does for a time at least protect against reinfection. The above general view will serve to indicate points of fundamental resemblance between Anthrax Fever and the Relapsing Fever of equines and of man; also between these and other infective or septic diseases; there are differences, which, however, seem subordinate or merely of degree, and enough to separate the 'Surra' disease from other members of the class of acute or sub-acute specific infections. The ultimate difference pertains to the infecting organism in each instance; and as to certain minor variations noted of the hæmatozoon under review in different animals, they are probably no greater than is known of the *Bacillus anthracis* in different species. The indigenous race of horses in India, as of sheep in Algiers, seems far less liable to Anthrax than are imported races."

Concluding Remarks on the Blood-contamination under Review.—There is to note, first, that Dr. Griffith Evans's discovery in 1880 of the protozoid blood-parasite characterising the equine "Surra" malady truly merits the epithet of

epoch-making; for until that date no instance was known of the association of acute infective disease with organised blood-contamination other than the protophytal. And even if this example seem exceptional, it yet possesses much pathological importance as evidence of the close similarity of morbid processes, whether associated with plant or with animal organisms of elementary character; more probably, however, the "Surra" affection will not long remain unique, proving to be only the pioneer of a series of the kind. In the abstract there seems no valid reason why hæmatozoa living as hæmatophytes should not be attended with analogous or even identical symptoms of derangement in hosts of the same species; but hitherto such an assertion as this, if doubted, could not be suitably tested, and hence the cognomen of "Equine Relapsing Fever" (employed by Mr. Steel) must now be interpreted as in a special degree significant. To the best of my recollection, none of the hæmatophytes are harmless tenants of the blood, all being possessed of pathogenetic properties, and all, moreover, belonging to the fungus (or alga) group of schizomycetes; whereas no such uniformity of property or of classification obtains amongst the known hæmatozoa, and hence of these an important differentiation may and has now to be made. Thus, on the one hand, there are the familiar instances of high-grade vertebrates whose blood teems with large and active organisms, without for a time at least any very manifest prejudice to their own health; these instances, *e.g.*, of birds and many mammals (reptiles and fishes are not excluded) being sometimes quoted in support of the view that all organisms appearing in the blood have but a subordinate meaning; and on the other hand there is the instance of this "Surra" disease, in which, according to concurrent testimony, the horse or mule in whose blood minute organisms appear, of far less formidable aspect than embryo-worms, is doomed to death, if less quickly, not less surely than an equine infected with the bacillus of Anthrax. Limiting attention to these contrasted data, a reasonable explanation of the pathological differences herein noted might, I think, be found in the circumstance that embryo trematodes and nematodes make use of the circulation chiefly, if not wholly, as a means of transport, neither developing nor even growing larger therein, the persistent egg-sac of some being a palpable bar to all but simplest nutritive interchanges; moreover, these filariæ remain but transitorily within the blood-vessels, being probably after a few hours either destroyed or extruded, in neither of which processes is there a conceivable necessity of serious impairment being done to the constantly replenished and purified blood. Some deterioration of the inhabited media is, indeed, inevitable, if not demonstrable; and account must be taken of the mechanical lesions occasionally (at least) resulting from impaction of the worm-parent or offspring in the blood and lymph channels of the hosts' body, with consequent œdema and hæmorrhage, either interstitial or free; yet upon consideration it will be evident enough that all such series of morbid changes are of a totally different character from the profounder alterations characterising veritable blood-infections, and could not be deemed reproducible in healthy subjects by inoculation of a blood-drop, as may be the "Surra" and Anthrax diseases entire.

The last topic I have to allude to is the remarkable contrast of symptoms offered by the rodent and the equine when their blood is equally infested by an organism morphologically identical in the two cases; thus, as already described, the rat then appearing to be altogether unaffected in its health, whilst the horse or mule suffers greatly and is certain presently to die. So far as I am aware, there is not known any strictly similar instance to this amongst the hæmozoic infection, nor any strictly analogous amongst the hæmophytic; yet upon analysis and comparison of all the data, it seems to me that the peculiarity of the present case rests on the conjunction of phenomena

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presented rather than upon any single phenomenon, and therefore it may be most convenient to consider separately the pathological state involved and the organism concerned. As regards morbid symptoms, whilst in the horse and mule these become so marked, they are described as being very insidious at their beginning, and liable to apparently complete intermissions. Animals at work have been found to present a highly contaminated state of the blood; others have died suddenly or unexpectedly, and there are some natural variations of symptoms in different provinces and between the horse and mule. These facts are mentioned here with reference to the likely detection or non-detection of morbid signs in animals not domesticated and only casually inspected; even in the rat at Bombay it was not clear to me that infected animals did not at some time and in some manner or degree suffer from their blood-contamination, the probability being that they did so suffer; and as regards the few instances reported of deer, frogs, and fishes in whose blood protozoa have been detected without the remark being made of illness associated therewith, this datum, too, is a negative one and similarly open to uncertainty. I think also that the "Surra" data respecting inoculated dogs raise the question whether these animals may not sometimes suffer, Mr. Steel's experiment pointing to the affirmative, and that with the monkey being likewise noteworthy as a variation from the parent type; and briefly, there appears to me some indication that morbid signs amongst the different species of animals being likely to differ, there will eventually be elicited a transitional series of such phenomena concurrent with one and the same monad blood-contamination, beginning with the mildest, *e.g.*, in rat or some dogs, and ending with severest, *e.g.*, in equines. Such inference would be supported by analogy with the Anthrax infection, concerning which it is said that there is nothing fixed or absolute in the receptivity or the immunity of any one species, and that variations occur amongst even individuals of the same species (Straus, *l.c., Douzième Leçon*); thus, rats prove to be only exceptionally inoculable, and sheep of Algerian race are naturally almost wholly immune to Anthrax, analogous to which fact is the asserted non-liability to "Surra" of the ass, whilst the horse and the hybrid mule are both highly susceptible. The present topic might be further illustrated, but it will suffice if a fairly reasonable explanation of some difficulties be already apparent. Perhaps the greatest difficulty, however, yet remains, that, namely, which requires for its solution either the assumption that the hæmatozoon in question has *per se* no essential connection with the symptoms of "Surra," being only an attendant or quasi-incidental phenomenon *(a)*, or else the admission that the hæmatozoon may retain its morphological aspect and capacity of life whilst parting with all or most of its virulent biological properties *(b)*. Regarding, first, the relationship of organism to morbidity, nothing new has yet been elicited from study of this equine "Surra" disease. The original observers were distinctly of opinion that the virus of the disease is represented by the organism, but hitherto the evidence goes no further than was reached by experiment with another infective organism, the *Spirillum Obermeieri*. Thus in my essays of nearly ten years back I was able to show that the mere presence of the spirillum did not necessarily entail fever or other marked symptoms of derangement, having on five separate occasions of special study detected in the blood this organism for a period of 24 to 72 hours prior to the onset of the febrile "relapse." This I regarded, and do still, as directly adverse to the doctrine that the spirillum is an epi-phenomenon the result of diseased action; the argument has been summarised elsewhere, and in this place I need only point out the analogy here with the hæmatozoon of "Surra," which I understand may sometimes be present early in the horse's blood when no other characteristic symptoms were noted, and which when transmitted to the dog may, sometimes at least, flourish periodically for

weeks without the accompaniment of manifest illness; the rat, again, acquires its infection doubtless from a different source, and commonly suffers even less. That data of this kind, showing a reduced connection—chronological and dynamic—or gradual disconnection between a blood organism and symptoms of disease, are not necessarily indicative of a primary and fundamental separation between the two series of phenomena, has, I think, been fully demonstrated for the longest and deepest studied of all the infective diseases; and to Anthrax I must again refer for analogical evidence bearing on the chief seeming anomaly found in the monad blood-infection under review. In that disease the infective organism is a bacillus which can be isolated and cultivated apart, there under certain conditions becoming enfeebled as to its virulent properties, whilst "morphologically the attenuated bacillus differs but little or not at all from the most virulent bacillus; the filaments, however, seem a little shorter and more divided, and culture-aspects less luxuriant also differ slightly; the spores arising from such culture possess the same modified properties as the mycelium from which they spring" (Straus, *XIme Leçon, l.c.*, January, 1887); according, therefore, to this datum, the admission is warrantable that the protozoic infecting organism, while retaining its morphological aspects, may yet, under conditions, lose some or most of its virulent properties. It is enough, for my purpose, thus to indicate a possible explanation of the seeming harmlessness of the rat-organism, as compared with the virulence of the equine, which is yet of identical aspect. I am indeed aware of the frequent fallacies of analogical inference, but the instance in hand seems unusually free from such risks, if an opinion can be safely based upon the numerous and direct applications of the Anthrax data to the facts of the "Surra" disease so far as these are known; the task, however, of demonstrating in detail such applications had best be deferred until there become available more data regarding "Surra" of the precise form of those so laboriously acquired for "Anthrax;" and as for encouragement to work in India, it seems to me hard to conceive a more promising field of research than the one which has been the subject of the present remarks.

NOTE.—Respecting the aspect of blood and bacillus of animals inoculated with the attenuated Anthrax virus, I have not met with definite statements. If the organism can be seen to flourish in the blood, whilst producing no other than an occult effect, then the analogy and comparison with the monad data would be complete; such completeness is not, however, essential to the argument above. It seems that reduction of the virulence of Anthrax by transmission through different species of animals is not yet a realised notion; but as by successive inoculations an attenuated bacillus can be raised to full strength, possibly the monad-virus has undergone such augmentation from its lower to highest degrees. Lastly, in employing analogy not against facts so much as in their explanation, no canon of science has been violated; and it is generally admitted that the verified Anthrax data have a bearing far beyond the range of the single subject to which they pertain.

THE INTERNATIONAL VETERINARY CONGRESS.

THIS Congress will assemble at Paris on September 2nd, and continue its sittings until Sunday, 8th, the meetings being held at the Hôtel de la Société de Géographie, 178, Boulevard Saint-Germain. The chief subjects for discussion are—1. Tuberculosis; 2. International Sanitary Service; 3. Compensation for Slaughter; 4. Prophylaxy of Contagious Pleuro-pneumonia; 5. Inspection of Flesh.

Not only is there, besides the great attractions afforded by the Great Exhibition, a universal exhibition of horses for breeding purposes, but

during the week the statue erected to the memory of the late Professor Bouley will be inaugurated at the Alfort Veterinary School.

It is to be hoped that a large contingent of our colleagues in this country will avail themselves of the opportunities offered for acquainting themselves with their professional *confreres* on the Continent, and assist in promoting progress by taking part in the discussions on the important subjects brought before the Congress.

Those who intend to be present should address themselves without delay to M. Capon, 193, Rue de l'Universitié, Paris (Seine).

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

ANNUAL MEETING, HELD MONDAY 6TH, 1889.

Professor PRITCHARD, President, in the Chair.

Present—Nicholson Almond, J. W. Axe, Geo. A. Banham, J. D. Barford, E. Beddard, Thomas Briggs, G. T. Brown, Jos. Hall Brown, sen., W. F. Bennett, A. L. Butters, T. Caldecott, B. Cartledge, M. Clarke, T. Corby, Jno. A. W. Dollar, T. A. Dollar, Wm. W. Dollar, Edward Coleman Dray, John D. Edwards, G. Evans, Sir Frederick Fitzwygram, C. J. Fleetwood, Dr. George Fleming, J. Fraser, Joseph M. Gillingham, G. H. Golding, George Jas. Gould, Thomas Greaves, Fred. Harrison, S. E. Holman, J. Sutcliffe Hurndall, Arthur H. Jacobs, H. Kidd, Geo. Edw. King, Herbert King, J. D. Lambert, T. E. W. Lewis, Clement Lowe, J. Mackinder, J. McCall, H. Mahon, N. W. Malcolm, J. B. Martin, W. Mole, Thomas Moore, Wm. Mulvey, Alfred J. Owles, W. Price, W. Pritchard, Geo. Reddish, W. Reekie, W. S. Rudd, T. H. Ridler, A. G. Rogers, A. Rogerson, William Shipley, sen., Sir H. Simpson, Jas. F. Simpson, F. Smith, Thos. H. Stidston, P. Taylor, W. B. Walters, Jno. Ward, W. Owen Williams, Wm. Wilson, Wm. Woods, F. W. Wragg, and the Secretary.

The SECRETARY read the result of the voting for Members of Council:—Walley 594, Mulvey 526, Taylor 448, Cartledge 437, Kidd 433, and Simcocks 386. These gentlemen were elected. For other candidates the voting was:—Banham 375, Dray 370, Carter 353, Blakeway 345, Briggs 248, Anderson 231, Wilson 206, Mackinder 127.

The PRESIDENT said a request had been made that a reporter, other than the one employed by the College, should be admitted to take report of the meeting. He (the President) was under the impression that no reporter, except their own, had ever been admitted to an annual meeting. The reporter who had applied represented the *Veterinary Record*. Reporters had been present at council meetings, but never at annual meetings.

It was decided that reporters from any of the veterinary periodicals be allowed to attend annual general meetings.

A motion that the members should be supplied with a *verbatim* report of what took place at the meeting was negatived, only eight voting for it.

Mr. DOLLAR referred to the Fellowship degree, and then moved that it was wrong in principle for a member of Council to act as an examiner.

Mr. HURNDALL made some remarks on Clause 9, as to its abolition, and seconded Mr. Dollar's motion.

Mr. PRICE wished to comment upon this very small report. Every year it seemed to be gradually dwindling. He thought that the report should have contained the thanks of the Council to the examiners who had served the profession so well, especially to J. Roalfe Cox, who had retired. Then as to

the Registration Committee, they had during the past year done very good and effectual service to the profession. They had gone through the Register and had struck 105 names off the Register in consequence of "death or relinquishment of practice." This showed that they had performed their part of the programme remarkably well. With regard to the Committee on Hereditary Disease in the Horse, a circular letter was sent to the 2,500 members of the College; but it would be interesting to know how many were returned filled up. He also wished to know what was the meaning of a circular dated November 12th, 1888, convening a special meeting of the Council for the purpose of considering a letter sent to the President, stating that the writers were informed that it was "contemplated to send a circular to the members of the profession on the subject of Hereditary Diseases in Horses, and we beg to request that the circular be sent to none but members of the Royal College of Veterinary Surgeons. We further beg to request that you will not recognise existing practitioners as members of the profession by sending them the circular without a resolution of the Council of the Royal College of Veterinary Surgeons authorising you to do so." It would seem that the President, without the authority of the Council, was anxious to send circulars to all members of the profession, and also to the existing practitioners. Of course those gentlemen who signed that letter were quite surprised that he should recognise the existing practitioners as members of the profession; that was the only inference he could draw from it. With regard to the "attendance of members of Council," he thought the number of committees that each member was upon should be specified, as otherwise a fair inference could not be drawn. The item for rates and taxes, £94 0s. 6d., seemed a very large one, and he should recommend the Council to appeal.

The PRESIDENT said they had appealed, and they got a considerable reduction.

Mr. PRICE said he could not understand the item for "Annual Dinner," £18 2s. 9d. If he came to the dinner he paid for it. It seemed to represent some sixteen or seventeen who never paid at all. The item for printing, stationery, etc., £203 2s. 2d., seemed very large. He hoped the Council would give these little things their careful and earnest attention. He would not mention anything about the salary to Secretary, £250, because he knew the Secretary well earned his money. With regard to Clause 9, he considered that as a member of the profession he had been robbed of his rights and privileges. They had been disenfranchised without rhyme or reason. He maintained that as long as he conducted himself in a gentlemanly manner he had a right, if members chose to elect him to the Council, to represent them on that Cooncil. He hoped the Council would assist them in this, and if it meant a fresh Act of Parliament let them have it. If the Council could not afford to pay for it the profession would. He earnestly asked the Council to take the poor members into consideration and to reinstate them, so as to give them a chance of representing the profession in the future politics that they had to deal with.

Mr. Dollar's motion, "That it is wrong in principle for a member of Council to act as an examiner," was then put to the meeting and lost, twenty-two voting for it and twenty-four against.

Mr. HURNDALL moved that the voting on the above motion be taken by ballot.

Mr. DOLLAR seconded.

Mr. BANHAM moved as an amendment that the Council proceed to the next business.

Mr. OWLES seconded.

The amendment was put and carried by thirty-three to thirteen.

Mr. WARD said he did not understand how there could have been any reduction in the rates and taxes, seeing that the year before last they were £63 18s. 4d., while this year they were £94.

The SECRETARY explained that last year included five quarters, and the previous one only three.

Mr. WARD thought the item "furniture, repairs, etc.," £54 14s. 9d., was rather heavy.

The SECRETARY said it included repairs to the building and outside painting.

Mr. CARTLEDGE proposed the adoption of the report.

Mr. WRAGG seconded.

Mr. KIDD asked the meaning of the item at the bottom of the account, "travelling expenses, £13 1s. 6d."

The SECRETARY said there were four examiners' fees held over because the Council had not the authority to pay them till after the meeting. These were the fees paid the examiners for travelling expenses.

Mr. PRICE asked what was meant by "dividend on dishonoured cheque, £3 3s."

The SECRETARY said this gentleman had a banking account, and the bank failed. He tendered them a cheque for £10 10s. This was a third instalment, and it was now paid off within a few shillings.

Sir HENRY SIMPSON said a question had been asked about the item for the annual dinner. He wished to be allowed to explain that. He had the honour of being President last year, and it was thought it was not an unbecoming thing for the profession to be honoured by the presence of members of the Royal family if possible at the annual dinner, it being a special year, the Jubilee year. They had sent an address from the College to the Queen, who had been graciously pleased to receive the same; and it was thought it would do the profession no harm, but might be the means of doing it some good by bringing it a little more prominently before the public. He took occasion to ask the Council if they were willing that the expense should be borne by the College. It was his intention to invite not only the Prince of Wales and the Duke of Cambridge, but also other persons distinguished in the army and other services and professions. The purse-strings were held very tightly, and there was a good deal of opposition; and it ended in Professor Brown coming to the rescue, and proposing that £25 should be granted for the purpose. That was a totally inadequate sum to invite fifty persons of distinction to this dinner, and there were preliminary expenses to be incurred in sending circulars to the members. The cost of postage, printing, etc., absorbed £18 out of the £25. That was represented by the item in the accounts, and he had the honour of inviting fifty guests at his own expense.

Mr. PRICE said he was perfectly satisfied with that answer. He should like to have some information with regard to the circular he had referred to.

The PRESIDENT said the matter was most thoroughly discussed at the Council before the steps were taken. He had never urged that the circular should be sent to unqualified members of the profession.

Mr. PRICE said that certainly was the information he gained from the circular, that the President was anxious that the unqualified registered practitioners should have that circular on hereditary disease sent to them to fill up. That was the whole pith of the circular.

The PRESIDENT said it was not the fact; it never was urged by him.

Dr. EVANS invited the attention of the Council to the state of the museum. He thought they should spend some money in labelling and cataloguing the museum and keeping it in order.

The PRESIDENT said he quite agreed. A Committee had been formed to look into the matter, and he thought that some renovation would shortly be undertaken.

Mr. HURNDALL, with reference to the dinner, said he objected on principle to pay for wine drunk by other people. He thought, instead of charging 25s. for a ticket, they should charge 7s. 6d. or 10s. 6d. for the dinner, and let each person pay for his own wine as he thought fit. He could name some half-dozen members who could be at the dinner who, as a matter of principle, would not be there because this mode of payment had been inaugurated. He would submit it for their consideration for another year.

The motion for the adoption of the report was then agreed to.

The PRESIDENT said that Mr. Hurndall's proposal with regard to the dinner had been thoroughly tried, and had completely failed to improve matters.

This concluded the business.

Mr. HURNDALL said, as he had been rather a troublesome member, he should be pleased to propose a hearty vote of thanks to Professor Pritchard for occupying the chair. A meeting of that description could not be presided over without some difficulty, but their President had done all that could possibly be done under the circumstances. They felt that their profession was progressing, and it would continue to do so if they were allowed to ventilate their feelings as they had been without interruption.

The resolution was adopted.

This terminated the business.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Black-friar's Hotel, Manchester, on March 27th.

Present :—E. Faulkner, president; Messrs. Peter Taylor, W. A. Taylor, S. Locke, T. Hopkins, J. B. Wolstenholme, Thomas Greaves, J, Moore, P. Pike, all of Manchester; Professor Penberthy, Royal Veterinary College; Messrs. H. Kidd, Hungerford; A. H. Darwell, Northwich; H. Ferguson, Warrington; T. A. Dollar, London; R. C. Edwards, Chester; Jas. Eltoft, Lancaster; Thomas Briggs, Bury; J. H. Carter, Burnley; W. H. Bridge, Bolton; J. Urmson, Bolton; E. T. Leather, Cape Town; T. Blakeway, Chaddesley; T. Dobie, Birkenhead; A. M. Michaelis, Stockport; A. Munro, Altrincham; J. Faulkner, Rochdale; W. Hall, Royton; E. S. Gubbin, Glossop, S. Chambers, Huddersfield; W. Noar, Bury; A. J. Jones, Manchester; and the Secretary, Liverpool.

Amongst the medical gentlemen present were included Dr. Cullingworth, London; Dr. Thomas, Preston; and Drs. Sinclair, Wilde, Rhodes, Wolstenholme, Hutton, Nichol, Coghlan, and Fairclough, all of Manchester.

Letters of apology regretting their inability to attend were received from a large number of gentlemen, including Professors Williams, Walley, McCall, McFadyean, Axe, Sir H. Simpson, J. F. Simpson, H. Olver, Dr. Fleming, etc., etc.

Messrs. Ernest S. Gubbin, of Glossop, and William Hall, of Royton, were unanimously elected members of the Association.

The meeting was afterwards augmented by the attendance of members of the Manchester Pathological Society to hear Mr. Wolstenholme's paper.

The PRESIDENT said he had the greatest possible pleasure in welcoming their visitors and in thanking them for the very great interest they showed in the subject of Mr. Wolstenholme's paper. He was sure the discussion would be entered upon by all with thoroughly open minds, and that the outcome would be satisfactory to the interests of truth.

Mr. J. B. WOLSTENHOLME then read his paper on "Puerperal Apoplexy in the Cow: Is it analogous to Puerperal Fever in the Human Female?"

Mr. PRESIDENT and GENTLEMEN,—Permit me to thank you for granting an opportunity of bringing before the two Societies a subject for discussion this

evening, and also to express the pleasure I take in witnessing these branches of medicine join to consider a question in pathology.

In many senses we are the creatures of circumstances, but this evening I feel myself especially so, inasmuch as a casual letter to *The Manchester Guardian* in October last has determined my position, and rendered the introduction of this subject imperative.

For some time prior to this circumstance, a correspondence had been progressing in that paper on "Milk Fever in Cows," was it contagious and what were the best prophylactic and curative means to be adopted? These communications were to me interesting, because it afforded to intelligent farmers who were deeply concerned, the opportunity to compare notes, and record what they considered to be of value. Nothing of special moment to the veterinary surgeon appeared, until a letter which discussed "the half-starving treatment," concluded with a significant suggestion. With your permission I will at this point introduce extracts from these letters.

On October 11th the correspondence commenced with a letter signed "Henry Waring," which offered all cow-keepers an unfailing preventive of great simplicity, viz.: "Half starve the cow for a few days before calving."

On October 18th appeared another letter signed "A. B.," which finished with a reference to a lecture by Dr. Cullingworth, of London, on "Puerperal Fever," and a question whether "what we call milk fever in cows may not be identical with the fever referred to amongst women."

On October 25th, Mr. J. B. Wolstenholme, wrote: "Milk fever in veterinary literature is synonymous with 'parturient apoplexy' and 'dropping after calving.' Parturient Fever is a totally different disease, being due to the presence of micro-organisms in the blood, giving rise to what is commonly called 'blood poisoning.' It is highly contagious, and is accompanied by high temperature, etc. Parturient Apoplexy, so far as I know, is a disease peculiar to the bovine species, and then only when in a state of domestication. It is in no sense a febrile disease, the popular term 'fever' being a misnomer. Indeed, the temperature is rather lower than normal, and no micro-organisms have yet been discovered in the blood which are considered to be in any way connected with it."

On November 8th the subject is resumed by "A. B.," who writes:—"Not being satisfied with Mr. Wolstenholme's answer as to the analogy between Puerperal Fever in the human female and what has been called Milk Fever in cattle, I communicated with Dr. Cullingworth, obstetric physician to St. Thomas's Hospital, London, whose lecture I referred to in my query. That gentleman, it will be seen from copy of his letter below, has no doubt as to the analogy, and after reading his address and after calling to mind my own experience, I feel convinced he is right."

Then follows Dr. Cullingworth's letter, which says:—"The disease which formed the subject of my lecture was formerly supposed to be due to an accumulation of milk in the veins, just as Mr. Waring considers the Milk Fever in cattle to be caused now. That and many other equally plausible theories have had their day in connection with human pathology, and have been long ago disproved. I have no doubt at all that the disease from which your cattle died is analogous to puerperal fever in the human female."

To this Mr. Wolstenholme replied on November 15th:—"I know something of the literature of puerperal fever in the human subject, and by this means have no difficulty in recognising the analogy between it and what we call Puerperal or Parturient Fever of the cow, of the mare, the ewe, and the bitch. Not only do we recognise this, but we are fully aware of the causes which give rise to it. We know of its septic, contagious properties. But with respect to Parturient Apoplexy the case is altogether different, and I cannot but express my fear that Dr. Cullingworth does not sufficiently under-

stand the clinical and *post-mortem* divergences which exist, and that he is not acquainted with the literature on the subject."

To this Dr. Cullingworth says in a letter published on November 19th:—"In reply, allow me to say that my letter was not written with a view to publication, but in answer to a private communication. I had no intention of denying the existence of Puerperal Apoplexy as a distinct affection, for I had not sufficient knowledge of the diseases of cows to justify me in expressing an opinion on the general question. As Mr. Wolstenholme says, the question of the pathology of milk fever is one better suited for discussion in a scientific society than in the columns of a daily paper, and if such a conference as he suggests be arranged, I will certainly do my best to attend."

Now, Gentlemen, these are the circumstances which led to our meeting here to discuss the question—Is Parturient Apoplexy in Cows analogous to Puerperal Fever in the Human Subject?

In the whole range of bovine disease, Parturient Apoplexy is about the most interesting, and the least understood; at the same time it is the most common of parturient affections and the most fatal.

Many observers have studied, and many are the opinions concerning, and the names given to it; but I think a description of the peculiarities, symptoms, and *post-mortem* appearances will better suit our purpose at present than a reference to names and theories.

Veterinary surgeons consider that the disease occurs only in the bovine species; that it appears to be peculiar to domestication; and further, that particular breeds are more frequently affected, whilst others possess an immunity. In the former category are comprised the rich and deep-milking varieties, and an example of the latter is seen in the so-called herds of wild cattle in this country, and the breed of Herefords, when not treated as ordinary dairy cows.

Another peculiarity is that primiparæ are *never* attacked, those at second calf very seldom indeed, those at third birth and upwards being the victims.

There is inability to urinate, defecate, and often the power of swallowing fails.

There is insensibility to pain, the cornea may be irritated with the finger without inducing nictation, and the most powerful irritants may be applied to the skin without creating pain. Control over the muscular system generally is lost.

There is tonic spasm of the cervical muscles, the nose being drawn round to the flank.

Again, Parturient Apoplexy usually follows easy labour, and those cases in which the least possible opportunity to septic invasion has been afforded. What I mean by this is—that if a cow calves with little effort, the fœtal membranes coming away at the time, and the whole process concluded without manual help, perhaps when no one is present; such a case would be far more likely to be succeeded by the affection than one in which several persons had made uterine exploration, and in which obstetrical hemp cords were employed that had been used many times before. Add to this the forcible dragging away of the calf, and the inevitable wounding of the passage, you will admit, I am sure, that conditions the most favourable for septic invasion have been provided; yet the clinical fact remains that *very rarely indeed* does Parturient Apoplexy supervene in these cases.

Puerperal Fever in the human female, in the majority of cases, can be traced directly to septic causes.

Autogenetic—from the presence of a dead fœtus, the retention of some portion of placenta or membranes, or of a decomposing blood clot. Parturient Apoplexy in the cow has not been traced to these causes.

Heterogenetic—by the direct introduction of the morbific ferment on the

hands of the accoucheur, by the use of infected linen, and by the presence of a miasmatic atmosphere.

The evidence and proof of this is overwhelming—a surgeon has made a *post-mortem* examination, after which the record of his attendance on parturient patients is plainly traced by the hand of death in characters of puerperal fever. Professors and students attend dissecting rooms, and afterwards visit the lying-in hospital, resulting in frightful mortality among the patients. Certain rooms and institutions have been observed in which almost every case of parturition taking place therein has been followed by this disease.

These facts have been observed over and over again; what evidence of the same is there in the case of Parturient Apoplexy? We ask for evidence. The veterinary surgeon has little to offer; on the contrary, we note, 1st, that cases of difficult parturition are strikingly exempt from the disease; 2nd, that whilst a surgeon may be attending cases of Parturient Apoplexy, and at the same time assisting the breed of Hereford cows to calve, yet neither does this disease nor puerperal fever supervene.

These facts are observed with respect to primiparæ also; they calve in the same shippons and byres, have a common bedding, are attended to and handled during parturition by the same persons, and assisted by the same instruments. Further, there is no evidence of the disease being carried from farm to farm by individuals, nor by mechanical means. We have nothing before us to warrant the suggestion that overcrowding, want of cleanliness, or the presence of manure heaps is the cause; and should this summary dismissal of the question of bad sanitation leave doubt in your minds, I need only ask how you can account for the marked exemptions I have indicated, if a cause so general as this is admitted?

Again, evidence is entirely wanting showing the presence of a septic poison in the flesh, for it is used for human consumption when killed before death ensues, and as food for dogs should the butcher arrive too late, or not at all.

There is no record of malignant pyæmia supervening the handling of the viscera, in the dressing of the carcase.

Some notes by Mr. A. Harrison Thomas, of Preston, which bear on the subject, appeared in THE VETERINARY JOURNAL of January last; they will serve as a centre around which we can more completely describe the symptoms, although I cannot admit that each case is typical of the uncomplicated affection.

To this, permit me to add short notes on two of my own.

Case I.—A deep-milking cow; fourth calf; parturition easy; found down the next morning; pulse 75, full; respirations 16, heavy and stertorous; conjunctivæ deeply venous congested. Head in normal position; rests on sternum; extremities warm.

At night, head drawn round to flank with tonic spasm; breathing more stertorous; bladder full, no passage of fæces—external temperature warm—internal 101° Fah. Advised that she be killed. *Post-mortem*: membranes of brain very much congested, uterus normal.

Case II.—Aged cow, dropped immediately after calving, was in this condition for three days, using catheter, purgatives, etc., bowels acted third day; was up and almost well on the fourth.

Mr. Harrison Thomas makes no reference to spasm of the cervical muscles, which is a common symptom; nor does he record the temperature, the marked rise of which is almost diagnostic in the majority of cases of Puerperal Fever and pyæmia.

On the other hand, Dr. Fleming, who also quotes a number of continental observers, states that "the temperature is not increased as a rule, on the contrary, it very often is below the normal standard." The temperature of

the cow in health is 102° Fah., *i.e.*, the human temperature, plus three; the pulse is about 60.

I would ask you to notice the suddenness of the attack; Case I. giving 33 lbs. milk on the day of calving: not unfrequently at time of seizure the udder is well filled with milk.

With respect to the *post-mortem* notes of the first case, I should consider the evidence as negative. The thickening of the omentum referred to seems of old standing, as "there was no inflammatory exudation on its surface."

In Case III. the symptoms detailed are not at all the ordinary ones of Parturient Apoplexy; "profuse sweating—much thirst—swollen vulva with sanious discharge therefrom," not being recognised as such.

Not only is the important item of temperature omitted, but not a word is said as to the presence of the lesions of peritonitis; of an inflamed and almost sloughing condition of the womb, nor as to the finding of abscesses in various parts of the body.

Case III. was of forty-eight hours' duration, and Case IV. was of ninety hours. Would you not have expected some evidence of local inflammation in this time, if death had resulted from a disease analogous to Puerperal Fever?

Again, Mr. Thomas informs us that "sixty per cent of the cases he saw in the year recovered in a day or so."

To my mind this throws a new light on the subject, for had it been Puerperal Fever, the antiseptic douche not used, and no quinine and alcohol administered, as in these cases, the percentage of recoveries would have been about one, instead of sixty per cent.

But the veterinary surgeon can lay claim to no such flattering record of recovery as sixty per cent. in the cases to which he is summoned; and the only inference I am able to draw from the statement is, that the average farmer and his servant are not sufficiently acute to detect these mild, transient cases, and so they pass unobserved, and the veterinary surgeon never hears of them.

Mr. Thomas notes the fact that an animal having recovered from one attack is especially liable to a second and fatal one. I would like to ask if this is a characteristic of Puerperal Fever in the human subject?

In summarising the foregoing points we may observe:—

Certain breeds of cattle are exempt: The disease is never seen in primiparæ: It is sudden in attack, and occurs in cases least exposed to septic invasion: There is rarely rigor: No rise in temperature: Tonic spasm of cervical muscles: Non-passage of urine and fæces: Insensibility to pain: Usually there is complete loss of intelligence: Frequently the respiration is very little accelerated: No enlargement of vulva: One attack predisposes to another: Occasionally almost instantaneous recovery: No evidence of conveyance from one farm to another: No record of poisoning on eating the flesh, or from absorption by wounds: Total abstinence of *post-mortem* lesions of metritis, peritonitis, and of pyæmic emboli.

For the sake of comparison, I will ask you to bear with me whilst I refer to two authors on Puerperal Fever.

Dr. Clement Godson defines it as:—"A *continued fever*, . . . often associated with local lesions of the uterus, vagina, or peritoneum: and caused by the absorption of septic matter, not infrequently arising from the retention of portions of placenta or membrane, or from a putrid fœtus.

"*Anatomical Characters.*—These differ greatly according to the duration of the fever, and the parts of the body affected by the disease.

"In some rapidly fatal cases of a malignant type, nothing has been found but a peculiar alteration in the blood. . . . . Generally however, *local lesions exist*, and if these are seen after death in the shape of

lacerations in the genital tract, they will present an unhealthy appearance, their edges being swollen and œdematous. The uterine surface is generally found intensely inflamed, softened, and occasionally in a state of slough. The results of inflammation may also be found in the veins, parenchyma of the uterus, and connective tissue around it; as well as in the lymphatics, so numerous and so large at this time, pus being frequently discovered in these vessels. The *peritoneum is nearly always affected*, it may be only congested in patches, but is generally universally so; the intestines may all be glued together; and the sac may contain more or less serum or sero-pus, with flaky-lymph; etc., etc.

"*Symptoms.*—In no disease do the symptoms vary more than in this, depending upon the violence of the fever and the localities attacked by the poison. . . . . Frequently there is, first of all, great depression, with headache; sometimes the first symptom is a rigor. The pulse becomes rapid and feeble, 130 or more per minute. The temperature rises to 103° Fah. or higher. The skin is generally hot and dry. Vomiting frequently occurs early. . . . . *Diarrhœa* is often very troublesome, the evacuations being horribly fœtid. . . . . There is often acute pain, with tenderness and swelling of the abdomen. . . . . As a rule the intellect is unimpaired. . . . . The breathing is short and hurried. . . . . The joints may swell and suppurate, and abscesses may form in any part of the body."

Dr. Playfair (page 355) says:—"In the great majority of cases the disease begins insidiously. . . . . The first symptom which excites attention is a rise in the pulse, which may vary from 100 to 104 or more, according to the severity of the attack, and the thermometer will also show that the temperature is raised to 102°, or in bad cases even to 104°, or 106°. (In the cow the equivalent of these figures would be 105°, 107°, and 109° Fah.)

"In the more intense class of cases in which the whole system seems to be overwhelmed in the severity of the attack, the disease progresses with great rapidity, and often without any appreciable indication of local complication. . . . . In the *worst form* of cases the temperature is *steadily high*, without marked remissions.

"In the second type, and that perhaps most commonly met with, the morbid changes are most frequently found in the serous membranes, in the pleura, pericardium, but *above all the peritoneum*.

"In the third type, the mucous membranes appear to bear the brunt of the disease.

"The fourth class of pathological phenomena are those which are produced chiefly by the impaction of minute infected emboli in small vessels in various parts of the body. These are the cases which most closely resemble surgical pyæmia. . . . . As a rule, intelligence is unimpaired, and this may be the case, even in the worst forms of the disease, and up to the period of death. Diarrhœa and vomiting are of very frequent occurrence."

I think, gentlemen, that this description of Puerperal Septicæmia in the human female will almost exactly coincide with the experience of the veterinary surgeon in the same well-marked disease as we see it in cows, mares, ewes, sows, and bitches.

In the cow, we particularly note the following:—The symptoms develop more gradually than in Parturient Apoplexy: Decreasing supply of milk: Rigor: Rapid, small pulse: Hurried breathing: Colicky pains: Expulsive efforts: Tumefaction of vulva: Great rise of temperature: Diarrhœa: No loss of intelligence.

The *post-mortem* lesions observed are very similar to those enumerated as occurring in the human female, though personally I have never seen "the bowels glued together."

In conclusion, gentlemen, I need scarcely say that I have sought rather to introduce than to treat the subject systematically; by contrast also I have endeavoured to prove my contention, that the so-called Parturient Apoplexy of cows is not analogous to Puerperal Fever in the human female.

The PRESIDENT called upon Dr. Cullingworth to open the discussion, remarking that they must all be very pleased indeed with the fair way in which Mr. Wolstenholme had introduced the subject.

Dr. CULLINGWORTH said he should have preferred to have taken part in the discussion after hearing the experiences of some of the veterinary surgeons present. However, as he had been called upon by name he would, as briefly as possible, tell them what had occurred to him in thinking this matter over, in reading on the subject, and in listening to the paper of the evening. Let him begin by saying that Mr. Wolstenholme was perfectly correct in thinking that when he (Dr. Cullingworth) entered into the correspondence on the subject of the analogy between parturition in cattle and Puerperal Fever in the human subject, he was ignorant of Parturient Apoplexy. He had, however, made it his business since to look up the literature on the subject, and he had gathered, from what was given in the recognised text book of this country of Dr. Fleming, and the recognised text book on the subject in France by M. St. Cyr, that the disease in cattle is not analogous to the fever in the human subject. So far as the analogy was concerned, therefore, he would abandon that contention, and at once admit that there was no analogy between Puerperal Fever in women and Parturient Apoplexy in cows, so far as their symptoms and *post-mortem* appearances were concerned. Still, with an eye to preventive means of treatment, he thought something might be gained if they could discover what was the etiology of Parturient Apoplexy. Was there any analogy at all between the etiology of Puerperal Fever in women and Parturient Apoplexy in cows? Now, to this point he would confine his attention. He believed, for himself, that there was; he hoped, for the sake of their common science, and for the sake of their common art, that there was, because it was upon this analogy being the true one that they might hope to found any hopeful measures for prevention and for cure. He took it that Mr. Wolstenholme's description of Parturient Apoplexy was a generally accepted one, and he had described it as coming on with some suddenness within from twenty-four hours to three days after calving; that it ran a course sometimes of twenty-four hours, sometimes of four days, and then either the cow died or quickly recovered. Perhaps he had in this brief sketch mixed up Mr. Wolstenholme's remarks with his (the speaker's) recollection of what he had read in the works he had consulted on veterinary obstetrics, if so, he asked pardon. That, however, he thought might be taken to be the accepted opinion of those who had seen most of this very interesting and pecular affection. The symptions of Parturient Apoplexy were those of gradual loss of interest in the calf, loss of appetite, increasing weakness, following either with spasm of the muscles of the neck or a more complete prostration, the animal lying extended. Now, the question was—to what did these symptoms point? Were they due to a form of poisoning, or were they due to a distinct disease? The *post-mortem* appearances in Parturient Apoplexy, they would all admit, were mostly negative. As to the word "Apoplexy," of course it was an entire misnomer; there was no Apoplexy. In one or two instances there had been found a clot on the brain, but any affection from which an animal could recover in four days could not be what they understood as being Apoplexy. The word "Apoplexy" they accepted here because it was convenient, but they denied altogether that it was really Apoplexy.

The *post-mortem* appearances, as he had said, had been mainly negative. There were a few instances where certain lesions in the brain and its

membranes and serous effusions in the lateral ventricles had been recorded, but it was explained that they were not so constant as to be at all worthy to be called pathognomonic of this disorder; they were probably purely accidental phenomena when they had been discovered. There was no gross lesion that was constant in Puerperal Apoplexy; therefore, they might say it did not correspond to any known disease. It was not an inflammation of the uterus, and the lung, and the brain, assuming a particularly severe form, because of the fact of its coming soon after calving. It was not a local disease with severe general phenomena. Now, not being a local affection, what was it? Was it not most likely (reasoning again from analogy) that this was a sort of poisoning—that it was a toxic affection? He was not asking them to say it was due to septic affection; but he maintained that the symptoms and *post-mortem* appearances appointed to some blood poison as being the cause of those symptoms and *post-mortem* appearances. They were much more in accord with that than any known affection. What was the history of a case where blood-poison was introduced? When the poison had spent its force, the patient recovered from the influence of the poison, and quickly recovered. If he was right in thinking there was fair ground for supposing the influence at work here was a toxic influence, what was most likely to be that toxic influence? Well, Mr. Wolstenholme had brought forward some facts that made it difficult to maintain that this conformed with the ordinary result of septic poisoning. He had shown, for example, that, whereas in ordinary forms of septic poisoning there was a distinct rise of temperature, here the temperature was not raised, but was generally somewhat lower than formerly. He had shown, moreover, that in the cases of Parturient Fever and the case of Puerperal Fever in the human subject it was of far more frequent occurrence in cases where manual or instrumental interference had been necessary than in simple, easy, straightforward labours. These were, undoubtedly, difficulties in the way of accepting this as a form of septic poisoning, and yet he (Dr. Cullingworth) should be very loth indeed to accept the view that it was not a form of septic poisoning. How, then, were they to get over these very great difficulties? He acknowledged them to be difficulties. Might he suggest one or two considerations? He did not say they completely answered or did away with the difficulties, but they were points which were just worth bearing in mind. They had instances of blood-poisoning that were unaccompanied with a rise of temperature. No one would doubt, he supposed, that lead paralysis was a form of blood-poisoning? He was not aware that lead paralysis was accompanied with a rise of temperature. Diphtheritic paralysis was another form of paralysis which was undoubtedly due to blood-poison; but the rise of temperature which accompanied the original contact of diphtheria did not occur, so far as he knew, when the original symptoms of paralysis made their appearance. He had taken some pains to try and ascertain whether there was any case on record where pure and unmistakable septicæmia had occurred without a rise of temperature. He had, so far, not been able to lay his hands upon a record of such a case. In the records of Dr. Calk on septicæmia as it occurred in mice—a mouse being an animal extremely susceptible to septic poisoning—he had not made any record of the temperature, unfortunately but he concluded his paper by saying that no doubt records of temperature would have been interesting had they been made—which was one of those tantalising remarks that "sent one empty away." But just let him (Dr. Cullingworth) tell them what the symytoms in mouse-septicæmia were. After the injection of a small quantity of putrid blood into mice, in about one-third of the number so treated, the animal remained healthy for twenty-four hours. Then the eye became dull and watery, the animal became languid, either moving little or sitting quite still, with back bent and limbs

drawn up. It then ceased to eat, respiration became slow, weakness increased, and death occurred without convulsions in from forty to sixty hours. On *post-mortem* examination, the internal organs—excepting spleen—were quite unaltered. After this, one-tenth of a drop of the blood of the animal that had died under these circumstances was inoculated into another mouse, and exactly the same set of symptoms occurred in exactly the same time. A large number of mice being inoculated, in not one instance did the inoculation of a very small fraction of a drop of blood from the septicæmic mouse fail to produce similar symptoms. It seemed to him these symptoms, and the absence of *post-mortem* appearances, were not extremely remote from those they found in Parturient Apoplexy. They were more akin to Parturient Fever in cattle than Puerperal Fever in women. With regard to the other difficulty of the easy labour, one must remember this—that there were two very distinct modes by which the poisoning might occur in Puerperal Septicæmia—he used that phrase because it was comprehensive—one was from septic intervention from without by the hands of the person assisting, or somehow or other by the instruments and so on; and the other was by the decompositions of portions of the membranes, or after-birth remaining within the uterus. Now, they were not entirely unacquainted with the occurrence in the human subject of cases of Puerperal Fever from the latter cause. Where labour had been easy, where there was no manual assistance, and yet where portions of the after-birth or membranes had been retained and had undergone putrefaction, then there was given off from the portions so retained a poison, probably of a chemical nature, because it ceased the moment the uterus was cleansed; which it would not do if it was due to micro-organisms in the blood. It was accompanied by the presence of bacteria undoubtedly, but there were no micro-organisms in the blood, otherwise flushing the uterus certainly would not immediately stop the symptoms. They could only rid the uterus of putrefying matter; and in these cases, which they called Septicæmia, which were due to chemical causes, after they cleansed the uterine cavity the symptoms subsided. If they did not cleanse the uterine cavity, what happened? Sometimes the patient died, sometimes the poison expended its force and the patient recovered in spite of it. Was it not possible—he merely threw out this as a suggestion—that in the cases of Parturient Apoplexy the poison—in those cases which occurred in the absence of manual or instrumental assistance—had entered in the method he had now described, owing to the unsuspected retention of portions (ever so small) of blood clots in the membrane, and the throwing off from the putrefied matter of a chemical poison? That was what he had chiefly to say about the points of analogy.

One point more. It was perfectly clear, from what Mr. Wolstenholme had said, and from what all authorities said upon the subject of Parturient Apoplexy, that it was a disease peculiar to cows. They must not, therefore, expect to drive the analogy too close—if any analogous disease at all existed in the human female. As to Puerperal Eclampsia, there was no analogy between Parturient Apoplexy and Puerperal Eclampsia in women. There was a Puerperal Eclampsia in cattle, but that was not the disease they were discussing. There were other points of difference which entirely disassociated the one from the other. There was no analogous disease to Parturient Apoplexy in the human subject, so far as he was aware.

Now, he spoke under correction, he felt he was rather getting into deep water if he began to speak of diseases of animals of which he only knew by reading, but he thought in the reading he had gone though (in consequence of his interest in this subject, commencing with the correspondence that Mr. Wolstenholme had read) he had come across a description of disease which occurred after foaling in mares. It was called Parturient Laminitis. So far

as he could gather, this was a disease absolutely peculiar to that species Now, this disease also was very peculiar. It consisted of inflammation of the foot. He would not go into it, because it was beside the mark. It was a disease occurring on the third day after foaling, and it generally ended in recovery. It ran a definite course of a few days and its local manifestation was inflammation of the foot and tenderness on the hoof. It appeared to him that this occupied somewhat a similar position with regard to mares that Parturient Apoplexy did with regard to cows—that both were diseases special to the particular species, and both coming after parturition certainly seemed to have some definite connection with that process. He found that the authorities gave a very large number of theories of the etiology of Parturient Apoplexy. He was reminded, in looking at them, very much of the literature of Puerperal Fever, which simply bristled with theories as to its mode of origin and mode of propagation. It had been put down to a grave form of Gastric Fever, and the result of mephitic gases, from the lack of the retention of waste products owing to the suspension of the functions of the mammary glands. It had been put down to a form of Milk Fever, said to be due to the sudden removal of blood from the uterus flushing the neighbouring vessels beyond measure and producing collapse. It was said to be due to air in the veins of the brain (that was to say too little blood in the brain), hyperæmia (too much blood in the brain), and œdema of the brain—variations of derangement of the ganglionic nervous system.

Professor PENBERTHY said it afforded him very great pleasure to address the Lancashire Veterinary Medical Association for the first time, and the pleasure was enhanced by the knowledge of the fact that practitioners of both branches of medicine had met to discuss a subject which had by some—possibly by some mistake—been considered to have special relation to both branches practising in medicine. He could only be echoing their sentiments, he was sure, if he said he had listened with a great deal of pleasure to the speech of Dr. Cullingworth on this matter. He had given them a distinct line to go upon; he clearly led them to understand that he withdrew, or that he yielded to their ideas, as to the relation of Puerperal Septicæmia in the human female and Parturient Apoplexy of the bovine. This was a subject which had been especially interesting to him (the speaker), as all subjects which were not clear should be interesting to every scientific man; and they were specially indebted to Dr. Cullingworth for having impressed them with the importance of teaching the etiology of the condition; and as he had suggested, the open road for the discovery of the cause is the morbid anatomy. There were certain conditions of which they were aware which had no real definite morbid anatomy. Yet they were as certain, from their knowledge of physiology, where those conditions were primarily produced—where the inciting factor was at work—as they could be if they could see the lesions. Take that of Rabies, for instance. It had just occurred to him there were no gross lesions in rabies which gave rise to the symptoms; and as they came to the more highly developed parts of the organism so would they find a larger number of symptoms—more phenomena arising from fewer gross lesions. He had no doubt Puerperal Apoplexy was immediately brought about by something acting on the motor area as well as the organic area of the brain. Whether it be due to some special toxic matter in the blood or to other conditions it was not for him to say; but there was one thing specially worthy of consideration—why should a cow suffer from this condition? Well, it struck him in this way; the cow had been domesticated and, in domestication, had been subjected to artificial conditions, the principle of which was the production of fat and of milk. He did not think St. Cyr or Dr. Fleming gave any record of Parturient Apoplexy occurring among wild animals; he had searched other authorities and had never met with such a case. In the

domestic bovine, after the third calf, when this production of fat was at its height, they were more liable to have this Parturient Apoplexy; it was not the cow that gave thirty quarts of milk a day, but the cow that gave so many pounds of butter a day. That had been his experience, and the experience of many others. They found it not only in individual animals that were specially good butter producers, but they found it more commonly in shorthorns which had been selected for this property of fat production. That was the most approximate speciality—or the speciality which was most closely related, in his mind, to the condition of Parturient Apoplexy in the cow. They had been told by Dr. Cullingworth that the term "Apoplexy" was a misnomer; and had it not been for a few recoveries, he (the speaker) did not think they could have the slightest doubt that it was Apoplexy. Apoplexy, as he understood it, did not depend upon a clot of blood. They might have a pressure of effused matters getting on the brain. There seemed to be some reason for supposing that they had, at the very least, a debility of vessels. He did not know whether it would be news to Dr. Cullingworth—it would be to some of them—but this Apoplexy (be it special or common) did occur prior to parturition. It had been his good fortune to see two cases (he might say bad fortune, for in one case the cow was his own) in which the cow, due to calve in three or four days, had an apoplectic fit, with the usual falling which they noticed in Parturient Apoplexy. His experience was that there was an absolute inability to gain their legs, and in the majority of cases consciousness was so far lost that there was an absence of desire to move, whether the power to do so was there or not. They were rather staggered by the large number of recoveries without any temporary or permanent paralysis—he must say that in the majority of cases the result was fatal; but in the minority he was perfectly open to allow that there was something to stagger them in that they did not get more long-abiding paralysis after an attack. He and a colleague had made a good many *post-mortem* examinations of the brain, having had an idea that there was some organic structural change in it, and they were almost led to the conclusion that there was a fatty degeneration of the arteries of the brain. Now, he was bound to say that he could not account for the recoveries, which were comparatively few. Against any form of septicæmia they had to put those few cases—and they were very few—which occurred prior to parturition. He believed St. Cyr and Dr. Fleming both reported cases after abortion, and in those cases the toxic theory would be more feasible than ever; but in the two cases he had mentioned the calves were borne alive in perfect health, and the occurrence was absolutely sudden—much more than, in his experience, he should expect after injection of any product of bacteria. The suddenness of the attack rather staggered him in receiving the toxic view. His mind was thoroughly open on this subject—he had no very great impression upon it. It was a condition about which they all had an individual opinion, whether it be well-formed or not.

Dr. SINCLAIR (responding to the call of the President) said he came there to learn, and with absolutely no other purpose, and he had heard a great deal: listening to the evidence as a member of a jury he must say he had come to no theory. As far as his previous knowledge went he had come to the conclusion that there was absolutely no relation between Septicæmia and Parturient Apoplexy. His experience of Puerperal Fever in the lower animals was gleaned in observing an epidemic among a flock of sheep in the South of Scotland, in the lambing season. There was considerable mortality in that season on the farm where he was staying, and he came very decidedly to the opinion that Puerperal Fever in sheep and Puerperal Fever in a woman were exactly the same disease, that they were exactly analogous. With regard to Parturient Apoplexy, he did not regard the term "Apoplexy" as such a serious misnomer. He thought the last speaker had made a mistake in not going on

and giving them more details. It seemed to him (Dr. Sinclair) if they took the facts of this disease as known only in the cow, there was one definite fact —there were certain kinds of animals exempt; they only found it in the elderly animals whose tissues were beginning to degenerate. In the course of the disease there was clearly no rise of temperature. With regard to the series of cows that Mr. Wolstenholme quoted from—those of Dr. Thomas, of Preston—it was a totally different class of disease. They were usually guided by the evidence, and unless gentlemen would make exact observation, then they were very liable to mix up two kinds of cases. He thought those cases in which there was a rise of temperature and a quick feeble pulse, and all the rest of it, were probably cases of acute bacterial disease. The fact that it was only found in elderly cows, in animals in which they would expect to find degeneration of the tissues occurring at the time at which there was a sudden change in the blood pressure—(for he should disregard the case of a change occurring ten days after labour)—taking these facts, they were driven to the conclusion that Parturient Apoplexy was a disease somewhat similar to (?) epilepsy. They had it in the convulsions occurring to the drunkard in a state of chronic alcoholism, or in the convulsion that occurred after certain poisons. Of course, he merely gave an opinion, but he would like to say a word or two to justify the position of antagonism he appeared to take up to his friend Dr. Cullingworth.

First of all, Dr. Cullingworth appeared to be desirous of proving that this was a septic disease. He thought that was a most dangerous attitude for a scientific man to get into. Dr. Cullingworth would admit, of course, that the proof was not sufficient; and if they went on the wrong tack and sought to prove that the disease was owing to a certain cause, it was a positive hindrance to getting at the true cause. There was one thing certain about all septic diseases—that a rise of temperature was an absolutely constant phenomenon, and to mention those cases where they had Puerperal Peritonitis with low temperature was positively introducing—not irrelevant evidence, but false evidence.

Dr. CULLINGWORTH,—I withdraw that unmistakably to-night. That was written in a letter, but I withdraw it, because I wrote it in ignorance of the condition known as Parturient Apoplexy.

Dr. SINCLAIR said the point he wished to make clear was this—that in all septic disease, either Puerperal Fever or whatever name they might call it by, there was always a rise of temperature, and when it was said that Puerperal Peritonitis existed without a rise of temperature, it was mistaken evidence, because it simply meant that the exact observations had not been made in sufficient time. They knew perfectly well there must be found a rise of temperature in the early stage of the affection. They knew that the lowering of the temperature was one of the most ominous signs they could find in cases of poisoning.

With reference to the proof of a septic origin, it seemed to him—going back to Dr. Cullingworth's remarks on the analogy of such things as lead poisoning —that was a chemical poisoning, and they were not speaking of the same things when they spoke of animal poisons of bacterial origin. He must say from his previous observations of Puerperal Fever of the lower animals, and of the facts of the cases of Parturient Apoplexy, he was clearly of opinion that Parturient Apoplexy was a totally different disease; and the way to clear it up, to make absolutely certain of the nature of the disease, must be by means of careful observation of the morbid anatomy, and by a careful analysis of all the products that could be obtained both before and after the parturition of the cow.

Mr. W. ALSTON EDGAR, F.R.C.V.S., said they might sincerely congratulate themselves on the turn which this discussion had taken. Their pro-

fession as veterinary surgeons brought them into contact with the great stock-owners of the country, and when they saw the medical profession apparently in conflict with their own, it was deeply to be regretted. They were all glad at the generous and frank withdrawal by Dr. Cullingworth from the position he had taken up in opposition to Mr. Wolstenholme. It might also be hoped, in the interest of stock-owners, that Dr. Thomas would be equally willing to make a candid retraction from the conclusion he had published in his paper in the January number of THE VETERINARY JOURNAL, as it was exceedingly unfortunate to find a gentleman of Dr. Thomas's high scientific attainments at issue in veterinary literature with nine-tenths of the profession to-day. So far as the discussion as to analogy of Parturient Apoplexy in the cow and Puerperal Fever in women were concerned, it was practically at an end. They all admitted these were two distinct diseases, and they were now drifting into a discussion that might occupy them a week, or a year. Dr. Cullingworth had pointed out to them the vast amount of conflicting theory that existed in their text books as to the cause of Parturient Apoplexy. He (Mr. Edgar) desired to speak clinically only upon this division of the subject, and he was free to admit, after having seen over five hundred cases of Parturient Apoplexy during the last fifteen years, that he was just as much in the dark with regard to its anatomical etiology as he was when he commenced practice; but he could claim a most definite knowledge of causes and conditions leading up to the actual development of the disease.

Those who had had practical experience were prepared to say that there were certain causes and conditions that would operate to a certainty in the production and development of the malady. Its clinical history and successful preventive measures were entirely opposed to any theory of organic or chemical poison as suggested by Dr. Cullingworth in his remarks upon lead poisoning and mouse septicæmia. The primary causes centered around the animals' breed, age, milking qualities, and plethoric condition, with loaded viscera (rumen, etc.) as the time of parturition. He believed the profession was almost unanimous in regarding Parturient Apoplexy as a preventible disease if proper dietetic and medicinal treatment were instituted. In successful preventive treatment, antiseptic precautions played no part whatever. Professor Penberthy had drawn attention to fatty degeneration. He thoug ht they should be clear in distinguishing between the function of fat separation in milk secretion, and storing up of fat in the tissues. For example, some of our most improved shorthorns were very bad milkers, and might be excessively plethoric at parturition, yet they possessed a remarkable—almost complete—immunity from Parturient Apoplexy. Heavy milkers, on the other hand, were immensely pre-disposed to the disease. It had been a terrible scourge to him, he had been driven from one theory to another, he had sought in vain comfort from the text books. As practical men they did not want a theory that would not hold good with one cow equally with another. He was glad that the theory of blood-poisoning, in any form whatever, had received a strong negative at that meeting. All of them were familiar with lead poisoning in cattle, and they drew a distinct line between mechanical and organic poisons. Dr. Sinclair had alluded to Epilepsy. Cows suffered from a form of Epilepsy entirely distinguished from Parturient Apoplexy.

As he had said, he looked upon the malady as a preventive one, provided they were allowed to adopt preventive treatment. He would give an example, which had come under his personal observation. From July to Christmas three cows belonging to the same owner calved, and each one went down with Parturient Apoplexy. One animal lay insensible about thirty hours, and after having had paralysis of one leg three weeks, it recovered; the other two had complete coma, and were killed in that stage of the disease. The owner became frightened for three other cows he had. Pre-

ventive treatment was suggested, and was agreed to. These cows were treated dietetically and medicinally, and they had since calved successfully. Such cases as this were, to the stock-owners, tangible evidence that the disease was not contagious.

A special point had been made of the temperature in this disease. He might be allowed to mention that in a series of experiments he had made upon parturient cows, he had found that normally the temperature commenced to fall a few hours before calving, and was at its lowest point (one to two degrees full) about thirty hours after parturition, which it would be remembered was a critical time for the onset of Parturient Apoplexy.

Dr. THOMAS (also in response to the call of the President) said, in the first place he would explain why he wrote the paper in THE VETERINARY JOURNAL. At the institution to which he was one of the medical officers they had a large number of dairy cows, and they had considerable mortality from a certain disease which the veterinary surgeon in attendance on the cows proclaimed to be Milk Fever. He (Dr. Thomas) naturally took some interest in the case, as it seemed to present special sort of symptoms that were similar in all those cases. He read up the literature as far as he was able to get the books on the subject, and he saw so many theories mentioned as being the cause, and so many theories with regard to the nature of the disease, that he concluded that it was not at all settled in the minds of practitioners as to what it really was. He thereupon looked into the subject of the bacteriology of it, and he could not find that there had been any records published. He, however, examined the organs himself, and he found those germs or bacteria present in every case. That circumstance led him to write the paper, thinking if any one else had seen similar organisms it might induce them either to agree with what he had found, or simply to say they had not found them. Mr. Edgar had said he hoped that he (Dr. Thomas) would retract his views with regard to the disease being a form of septicæmia. The discussion before the meeting was mostly as to whether this disease had any analogy to Puerperal Fever; but that was not the subject exactly that he went into in his paper. There was no doubt that among cows there was something special—whether it was that the constitution of the cow was different from that of the human being, or whether it was a special disease, he would not offer an opinion. In these cases that came under his notice, they were all old cows, and their symptoms quite agreed with what was mentioned in the text books on the subject. He gathered from what Mr. Wolstenholme had said that he was rather disinclined to think those cases were not Parturient Apoplexy. So that it might be that he (Dr. Thomas) had been investigating a totally different disease, and he came here in the hope really of hearing further opinions of the symptoms so that he might consider whether these were cases of Parturient Apoplexy or not. There was one omission in his case, and that was to record the temperature; he did not take it at all, and the reason was that he only looked at the cases casually, except at the *post-mortem* examinations, because he had not the remotest intention of publishing anything. He took rough notes of what he saw when he examined the cows, and from the symptoms he concluded there must be something of a toxic nature to have such a sudden effect. One fact that had been mentioned with regard to subsequent paralysis was another point that was in favour of that theory. Why should there be subsequent paralysis of anything unless it was subsequent apoplexy? But there was no clot in the brain structure to be found in any one of the cows. As it was only gross lesions of the brain, he imagined, that could constitute real apoplexy, he thought the term Puerperal Apoplexy certainly did not fit the cases. He could not add anything further to the cases he had recorded. He had not seen any since the cases stopped. He looked upon the outbreak as

an epidemic that came suddenly and it ceased, although a cow was calving almost daily.

Replying to a question by a member, as to whether the veterinary surgeon who attended these cows gave any instructions as to an alteration of their treatment and diet, Dr. Thomas said they were all strictly under the veterinary surgeon's control, and there had been dietetic treatment. The chief authorities of the institution had given strict orders that the cows should be kept on low diet for a fortnight beforehand; and they had what the veterinary surgeon sent in to the cowman—a cleansing drink, he termed it—a drink to be given before calving, and all these cows had one. One cow that had this particular affection a year ago he noted specially, because the cowman was very particular to give this drink to this case, and he (Dr. Thomas) was watching the effect. But it did not seem to have any effect at all, as the cow died.

Dr. WILD said he had listened with the greatest pleasure to the discussion. He was pleased to be amongst them, because he felt keenly, as a pathologist, that they needed the aid of veterinary surgeons on many important points in human pathology on account of the greater opportunities of *post-mortem* examination that were open to them, and the means they had of conducting experiments on the lower animals which they had not in the branch of the profession to which he belonged. From Mr. Wolstenholme's paper, and the remarks of various speakers, it seemed clear that the terms "Milk Fever" and "Parturient Apoplexy" included more than one class of cases. First, there were those accompanied by a rise in temperature, almost certainly of septic origin and corresponding to puerperal fever in the human female, and also found after parturition in all domestic animals. Secondly, there was a group of cases to which alone the term "Parturient Apoplexy" was strictly applicable, occurring only in cows; characterised by a fall in temperature, coma of more or less sudden onset, anæsthesia, and sometimes local paralysis; the symptoms either terminating in early death, or gradually passing off. The interesting fact that these cases only occurred in cows, and rarely before the third calf, led them to inquire in what respect a cow at that period differed from other domestic animals. The most striking difference undoubtedly was the enormous increase of the milk-producing capacity of the cow—a capacity which was increased in every way by selective breeding and artificial feeding until the amount of milk produced was out of all proportion to the amount produced by other domestic animals. It was also a significant fact that the cows which produced the most milk were also those which were most frequently attacked by Parturient Apoplexy. Could they find any explanation of the pathology of the disease in this increased capacity for the production of milk—that is, an albuminous fluid containing large numbers of fat globules? To turn for a moment to human pathology; they found that in some cases of Diabetes the blood contained fat globules. Many cases of Diabetes terminated by coma, resembling in its sudden onset and other characters the Parturient Apoplexy of the cow. In some of these cases fat emboli had been found blocking up the small vessels of the medulla and other parts of the brain. Was it not possible that a similar condition of fat embolism might be the cause of Parturient Apoplexy? The excessive production of fat globules in the milk would afford a source from which fat globules might, under certain conditions, pass into the blood, and being carried by the circulation into the brain might block up the small arteries or capillaries and so produce coma. If the fat globules were re-absorbed, recovery would take place; thus affording an explanation of those cases of recovery which were difficult to account for on any theory of the disease assuming serious organic changes of the tissues. He did not claim any value for this theory, but simply suggested its possibility as a guide for future researches.

A gentleman said he was the "A.B." who gave rise to the correspondence on this subject. He had heard it said that a heifer did not have what was commonly called Milk Fever. He met a gentleman last year at Lord Egerton's sale, in Cheshire, who said his cows had suffered a lot from Milk Fever, and that a heifer of three-and-a-half years' growth had been seized with it, and had died. Three cows that he (the speaker) lost last September were all treated scantily to food, were all assisted by himself to calve, and each of them was seized with Parturient Apoplexy, and died. One cow calved in the open field, and that one went on all right, and lived. He had calved six cows this month, and on the strength of Dr. Cullingworth's advice to him with regard to their treatment, he had felt the greatest assurance. He had fed them in the ordinary way, taking no notice of the quantity, but seeing that they were healthy, and that their bowels were right. In every case they had done well. He had a cow that had calved that morning—a cow nine years old—which gave a dozen quarts of milk a day.

Mr. HOPKINS: This meeting marks a red-letter day in the history of our Association, when the two branches of the medical profession are united to discuss the pathology of Parturient Apoplexy. But there are subjects of far greater importance—Tuberculosis, Rabies, Scarlatina, etc., which should be thrashed out in this way. In regard to the views advanced by Professor Penberthy, as to the part fat and fat producing plays in the etiology and pathology of Parturient Apoplexy, old practitioners will bear me out in stating that this disease does occur in poor cows; and in such cases the animal is almost certain to die. The longer the period elapsing after the act of parturition before development of the disease, the greater the chance of recovery. Many cases recover from the brain symptoms and regain consciousness, but paralysis of hind extremities continues, and although the animal may be eating and drinking, and apparently in good health, it has to be destroyed on account of this paralysis. Milk Fever is confined to districts, depending in great measure upon the treatment to which cattle are subject. It is rarely met with in the cheese-producing district, much oftener in dairy and butter-making districts. With proper diet and exercise, it is a preventible disease. These facts are not consistent with septic origin. In one dairy I know predisposed cows are bled before calving, and it is regarded as a certain prevention.

The PRESIDENT said he had been requested to ask if any one had seen a case of Milk-Fever before parturition?

Mr. EDGAR, in reply, said that in a very extensive experience of the disease he had seen one case *in primipera*, occuring after the third day, and three or four cases before parturition. He had seen one calf delivered while the cow was insensible, and it never recovered.

Mr. KIDD said he had had very large experience of this disease, and he had never once seen or heard of a cure where Parturient Apoplexy had attacked the cow within twelve hours after calving. After twenty-four hours there was a chance of recovery, after thirty-six hours there was a good chance, and after forty-eight hours there was nearly a surety of getting better. Parturient Septicæmia, which he considered analogous to Parturient Fever in the human female, was, he believed, due to blood poisoning, and was infectious. Parturient Apoplexy, in his opinion, was not due to that; the *post-mortem* appearances being almost negative, *i.e.*, the uterus presented no abnormal appearance. The only appearance was in the brain, and what that was due to he was not prepared to say.

Prof. PENBERTHY said this fatty degeneration theory was one theory of his to account for the whole of the conditions that occurred here; but what he had heard that night went further to prove it than any opinion he had had before. He had been with parturient animals all his life, having had nearly

a thousand of his own, and had seen large numbers of cases of Parturient Apoplexy, and Mr. Hopkins had added to his (the speaker's) information materially by giving his experience of paralysis. He had frequently seen paralysis, but not so commonly as Mr. Hopkins had done. This all pointed to some organic disturbance in the brain. He had made many sections of the brain and stained them, and in these cases the darkening of the sections had been much more marked than in ordinary brains.

Dr. CULLINGWORTH said it would be helpful in elucidating the etiology of this affection if sound investigations could be made of the blood of animals dying from Parturient Apoplexy, specially from the bacterialistic point of view. In that way one might get positive or negative evidence, and so, possibly, set the matter at rest. He had the authority of Dr. Wild (who was assistant pathological lecturer at Owen's College) to say that he would assist any one in such an investigation if they would send him a small quantity of blood (from any case that might come under their observation) carefully packed between two glass slides. He would make microscopic investigations of the blood, and try and ascertain whether there was any information to be got in that way.

Mr. WOLSTENHOLME said that Dr. Wild would also be pleased to examine the medulla for fat emboli. He had very little to add to what he had said in his paper. He would like to ask Dr. Cullingworth a question. Did he consider Puerperal Eclampsia in the human female due to septic poisoning?

Dr. CULLINGWORTH: No.

Mr. WOLSTENHOLME: To a chemical poison?

Dr. CULLINGWORTH: Yes.

Mr. WOLSTENHOLME said he was perfectly satisfied—indeed, it was admitted—that there was no analogy between the two diseases. The absence of the disease *in primiperæ* precluded the idea that it was due to septic poison. It was possible they might have a poison something analogous to that which in human females produced coma, convulsions and death in diabetes, and several other things—such as the organic poisons, which were formed in certain states of the body—subtle alkaloid poisons.

Votes of thanks were afterwards passed to Mr. Wolstenholme for his paper, and to Dr. Cullingworth and the other visitors for the interest they had taken in the discussion.

Dr. CULLINGWORTH, in acknowledging the vote, said he quite agreed with those speakers who had alluded to the great desirability of both branches of medical practitioners meeting more frequently. He did think that great benefit might arise from so doing in the elucidation of many other pathological problems, besides the ticklish one they had been discussing.

A vote of thanks to the President closed the proceedings.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE spring quarterly meeting of this Society was held at the Queen's Hotel, Leeds, on May 3rd.

The President, Mr. W. Lodge, occupied the chair, and the members present were Messrs. G. Carter, Keighley; H. Snarry, York; A. W. Mason, Leeds; J. M. Axe, Doncaster; Anderton, Skipton; Anderton, Halifax; McCormack, Leeds; B. Smith, Barnsley; A. W. Briggs, Halifax; T. Fletcher, Sheffield; M. Robinson, A. E. Hanson, H. Pollard, and Joe Clarkson; J. Scriven, Hon. Treasurer, Tadcaster; and W. F. Greenhalgh, Hon. Secretary, Leeds. Mr. Chas. Phillips, A.V.D., was present as a visitor.

The HON. SECRETARY read letters of apology for non-attendance from Professors Axe and Williams, Mr. Greaves, Manchester; Mr. P. Deighton, York; Mr. Pickering, York; and F. Danby, Bainton.

Mr. Longhurst, Port Inspector of Hull, and Mr. Gavin Scott, of Scarborough, were nominated for election as members.

A discussion took place on the inaugural address of the President, delivered at the last meeting.

Mr. CARTER said he listened with considerable pleasure to the address, which contained many points of great interest to the profession. He noticed that their President was a warm advocate for the establishment of a uniform charge for the examination of a horse as to soundness. That question had been a bone of contention for a considerable time in that Association, and it had cropped up in other Associations. While sympathising with the idea of the President, he could not say he appreciated altogether his opinion. As long as veterinary surgeons continued to practise, so long would many clients continue to follow the opinion of the man they had known for some years, in preference to the opinion of a younger unknown man. If a young member of the profession got half a guinea for an examination he thought he could not grumble. Some clients absolutely refused to pay a guinea. Well, they must suit their clients. It was so in the medical profession and all businesses, and it would be no use passing an arbitary rule fixing the charge for examinations. It was a question best left to the practitioner himself. Alluding to the question of the examination of cow-sheds, he said he was sorry the duty of carrying out the Act had been placed in the hands of those who were incompetent. It rested with veterinary surgeons to impress upon the authorities that it was a duty which should be delegated to them. The President had said that where the disease of Tuberculosis reached a certain stage in a cow he would condemn the meat of such an animal. The difficulty he (Mr. Carter) saw was to say when the disease had extended to such a stage that the meat would not be fit for human consumption. At any rate it was a question which ought to be decided by a qualified veterinary surgeon only. With respect to milk from tubercular animals, he believed it was dangerous to health to use it, but where no tubercles existed in the mammary gland he did not think that milk from such animals should be rejected. He agreed with what the President said with regard to the question of hereditary unsoundness.

Mr. BRIGGS heartily agreed with Mr. Carter in his remarks on the question of the inspection of meat. At the same time Tubercular Disease was not fully understood. They had been studying it during the last few years, but it was not fully developed yet. It had only reached the half-way house, but they would live to see the day when they did fully understand it. He was glad to see that a measure was before the legislature with regard to the sale of horse-flesh as human food. It was an important matter. We sent from England to Germany horses alive and dead, and they were made up into various savoury compounds which the people of this country were foolish enough to eat. It was important and desirable that societies such as theirs should bring before the notice of the various local authorities the question of the employment of empirics as inspectors of meat. They, as an Association, had certain objects to carry out, and he thought they might form a committee and draw up certain recommendations to the various local authorities, having in their employ inspectors of meat, showing why those men should not occupy their positions, and showing why they, as veterinary surgeons, considered themselves entitled to be appointed to such positions. The President's paper throughout contained a great deal of good sound advice.

Mr. FLETCHER, referring to the question of Tuberculosis, said Mr. Carter had laid it down that he would not condemn an animal for milking purposes unless the mammary glands were affected. That brought to his mind several cases that had occurred in his practice where the animals had been

affected with tubercle without the mammary glands being affected, and pigs who had had the milk from cows in such a condition had suffered badly. In his readings as to what medical men considered on the subject he found it almost universally laid down that milk from tubercular cows should not be used for food, as it was injurious to children. He believed it had been stated that cases of Consumption had been traced to the consumption of milk from tubercular cows. There was no doubt many an animal that had tubercules about it at the time of being killed was used for food. He did not think they had reached the point where it affected the meat when tubercules were in the system. It was a point they ought to pay rather more attention to. Tubercular Disease might be well developed, and yet the meat surrounding it appeared healthy. With regard to the question of uniformity of charge for examination, he agreed with Mr. Carter. They could not lay down a hard and fast rule for charges. For instance, a tradesman wished one of them to look over a horse and say whether he was likely to be useful and suitable for his requirements, without going thoroughly into an examination, and such a man would never pay a guinea. It was a matter which would have to be left to individual members, although they should stick to the guinea wherever it was possible. With regard to the inspection of meat, there could be no doubt it ought to be in the hands of veterinary surgeons. They saw as much healthy meat as most people, and they saw more diseased meat than any one else. By laying their case before the various local authorities he thought they would be going a step in the right direction.

Mr. MASON agreed with what had been said as to meat inspections. They were, however, difficult cases. He remembered a case in Leeds which cost a lot of money, in which two physicians described the lungs of an animal as being "stinking and disgusting," whilst two others said the meat was fit for food, and they would eat it. Where were they to draw the line? What carcases were they to pass? He believed they had more to learn with regard to this disease of Tuberculosis.

Mr. SMITH did not agree that the meat of tubercular affected animals was unfit for food, unless it was in the last stage and the flesh was flabby. His impression was that cooking destroyed what might be injurious to the system in many cases. He had seen a great many cases in which the milk from cows suffering from Tuberculosis had been given to pigs, and he had never seen an injurious result arising from it. If the milk was boiled he did not think there was the slightest danger in using it.

Mr. FLETCHER said Tubercular Disease was perhaps like some other diseases; if it got into a strong, healthy system the system overcame the power of the disease, but if it got into a feeble system the effect might be powerful. He thought, however, they were not sufficiently enlightened on the subject.

The PRESIDENT, in reply to the discussion, maintained that a guinea was little enough for an examination, and that they ought to uphold their profession by charging nothing less. When they considered the time an examination took, the care they had to exercise, the trouble they were put to, and the fact that they rendered themselves liable to be sued by any client if by any misfortune they made a mistake, he thought a guinea was little enough to charge. He had been asked to do it for less, but if the man was a poor man he did it for nothing. The registering of cow-sheds was certainly compulsory by law, but it was done in a loose manner, and it was time steps were taken to have the Act properly enforced. With regard to Tubercular Disease, where the carcase was in good condition and all the appearances were healthy he certainly should not condemn it, but where the beast was emaciated he should condemn it for food and milking purposes. He agreed

with Mr. Briggs that it was desirable a committee should be formed to draw up certain representations to the various local authorities on the subject of meat inspection.

Mr. BRIGGS moved "That a committee be appointed to report to the next quarterly meeting upon the subject of the appointment of empirics as inspectors of meat, and also as to the registration and sanitary arrangement of cow-sheds, with a view of some representation being made to the various local authorities."

The PRESIDENT seconded this, and it was carried unanimously.

The committee elected consists of the President, and Messrs. Carter, Briggs, Mason, Axe, Greenhalgh, and Scriven.

Mr. MASON here read a paper on "Shoeing and Machine-made Shoes," and added:—

In conclusion, I may say that I wrote to the makers of the nailless shoe, telling them I was reading a paper on the subject of shoeing before this Association, and was wishful to bring a shoe before the meeting. They replied that they had no models, and I asked them to send a shoe and I would make my own models, but they replied they preferred to make their own models.

I was reading in the *Field* the other day the following statement, made by a distinguished member of the profession: "Nails might be driven so as to take a wide hold, coming out of the wall in such a way that at each fresh shoeing old nail-holes might be obliterated." I should like the opinion of this meeting on that.

(Mr. Mason at various points in his paper submitted models and specimens of the different shoes referred to.)

The PRESIDENT said they had all listened with pleasure and gratification to the able paper of Mr. Mason. He agreed with what that gentleman had said with regard to the use of the knife. It was necessary in some cases, but there was no excuse for the abuse as practised by some blacksmiths. He was in favour of machine-made shoes, but thought they would be better if they fitted the hoof more accurately.

In answer to Mr. ANDERTON (Skipton), Mr. MASON said the machine-made shoes he had exhibited were made by the Horse-Shoe and Nail Company, of London.

Mr. MASON said the three-quarter bar shoe he had devised to suit a horse that could not travel in any other description, and the shoe could also be sharpened when necessary.

Mr. MCCORMACK asked if Mr. Mason had tried Lacomb's shoes for cutting.

Mr. MASON replied that he had tried them with this particular horse, and found they were not so good as the three-quarter bar, which he had also found useful in other cases.

Mr. PHILLIPS (Veterinary Department, 13th Hussars) said he had listened with great pleasure to Mr. Mason's very able paper. Horse-shoeing was very important, indeed, as a question to be studied by veterinary surgeons, as it was a cause of such frequent lameness, arising from that necessary evil the introduction of nails. Whenever his thoughts dwelt upon horse-shoeing, he wondered why there had been no method or invention brought forward to protect the horse's foot from wear and tear, and that they still retained the old method of driving in nails, and thus breaking the horse's foot. The method of the ancients was the method of to-day. They saw marvellous inventions and improvements on every hand, but as yet nothing seemed to have been done with regard to the protection of the horse's foot. In fact, they had made it worse for the horse by substituting stone roads for macadam. He had read an article regarding the nailless horse-shoe, but he felt at once it would be useless, at any rate, for the class of horses he had to deal with—

hunters and animals in the service. He could not see how the shoe was to hold on when an animal was galloping over a ploughed field, or when a draught horse was putting out an effort. There was an opening for some one with an inventive mind to devise some method of protecting horses' feet, and if it was successful there was a large fortune to be made. Dr. Fleming had been most energetic in his attention to the subject of machine-made shoes. He (Dr. Fleming) was struck with the unserviceable condition of the army in the field for the want of shoeing, as it actually impeded the movements of an army. It was then the practice to take into the field large forge waggons, and work up the iron on the field; but the conclusion was arrived at that this was a bad method, and Dr. Fleming devised the present machine-made shoe, and brought it into use for the service. Three-fourths of the cavalry were shod with the machine-made shoes, and the other fourth with hot shoes made by the farriers out of old iron. It was found by experience that there was very little trouble in fitting the horses, and that the shoes did not, as a rule, require much altering. The smiths were bound to bend the shoes at the toe or heel cold, so that in the field they could easily bend them over any hard substance, such as a stone. Cold fitting was, of course, not so good as hot fitting, but for all practical purposes he found that the animals worked well in the shoes. The only drawback, he thought, was that the material was not quite good enough, and that the shoe was not quite strong enough at the toe. Cold shoeing in the service was superior in every way to the old system.

The PRESIDENT asked how long the machine-made shoe lasted in an ordinary way.

Mr. PHILLIPS said in the station, with ordinary work, the shoes on an average lasted a month, and when covering between eighteen to twenty miles a day on the line of march they lasted between a fortnight and three weeks.

The PRESIDENT: How long does the ordinary shoe last?

Mr. PHILLIPS: It was the practice in the service before the introduction of the machine-made shoe to put on heavier shoes with the view of making them last a month, but they did not do so, however.

Mr. ANDERTON (Skipton) said for the last two years he had used machine-made, Bessemer steel-ribbed shoes, and had found them very good. They were easily sharpened, and lasted well.

Mr. MASON said he had used steel shoes, but they would not do for Leeds, on account of the condition of the streets. Horses slipped in them on the stones as though they were on ice.

Mr. GREENHALGH believed machine-made shoes were all right for use in the army, but for ordinary wear on paved roads he thought they were a mistake. He proposed a vote of thanks to Mr. Mason for his admirable paper.

Mr. FLETCHER remarked that no doubt they had done their best to break the horse's foot by the use of nails, but the man was not born yet who had brought forward any better system. He seconded the proposition.

Mr. ANDERTON (Halifax) described a shoe used by the London Omnibus Company fitted with an arrangement of springs to minimise the concussion.

Mr. CARTER said he had seen the shoe referred to, but it was no use on country roads, because the springs got bound up with clay.

The resolution was carried unanimously.

Mr. MASON, in reply, remarked that some of the points he had made in his paper he did not believe in himself. He merely wrote them down to cause discussion.

On the motion of Mr. Axe, a vote of thanks was accorded to the President, and the proceedings terminated.

W. F. GREENHALGH, *Hon. Sec.*

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

THE annual meeting was held at the Bush Hotel, Carlisle, on the 29th March, 1889. Present—Mr. J. Donald, F.R.C.V.S. (President), in the chair; Messrs. Greaves, Manchester; Faulkner, Manchester; Campbell, Kirkcudbright; McIntosh, Dumfries; Carlisle, Carlisle; Howe, Keswick; Little, Abbeytown; Tallentire, Skelton; Chalmers, Annan; Bell, Sen., Carlisle; Jno. Armstrong, Penrith (Secretary); and others.

After the usual routine business, the Secretary, in accordance with notice given, proposed the election of Mr. Tait, of Annan, to be a member. Mr. Donald seconded, and motion carried.

Mr. ARMSTRONG gave notice that at the next meeting he would move that a new book of rules be printed. The present book does not contain all the rules, whilst some of the rules have been altered; for instance, the rules as to loan of instruments and others and Rule 16 are not included, and Rule 4 is now struck out.

The PRESIDENT then read his inaugural address.

GENTLEMEN,—In the first place allow me to express my thanks to you for the honour that you have unanimously conferred upon me. It is with feelings of trepidation that I venture to assume the dignified position of President of this Society, and had I consulted my own personal feelings I should have sought to induce some older and more worthy member to fill this position. It is usual for the President elect of the year to inaugurate the proceedings by an address. While I do not propose to depart from this established custom, I shall not attempt one of those classic orations which are the fashion, but content myself by making a few remarks upon what I may call every day-matters. If we glance back to five years ago, when this Society was first established, I think we cannot help feeling that it has been a power for good. Many very important matters have from time to time been brought forward and dealt with, and I think every member will feel that he has obtained some useful information from the discussions. In the future I think we might with advantage consider and arrange many matters that affect us socially. One thing which I have often thought might be agreed upon is a scale of professional fees. There is the greatest disparity in the charges made by different members of the profession, and I think it is a short-sighted and ruinous policy for men to charge very low fees to obtain a large practice. I am amongst those who would uphold a fair, reasonable remuneration, and I think a veterinary surgeon should at least be able to command as much for mileage as he would be charged for a hired hack from any ordinary posting establishment. It will be known to most of you that there are veterinary surgeons who will drive their own carriage and horse at all hours of night or day, in all sorts and kinds of weather, for half the fee that would be charged him for the distance by a job-master. This only leads to a ruinous competition, because it is not the nature of an Englishman to submit to such competition without retaliation; and we should remember that one man can afford to charge as little as his brother professional, and rather than see his clients leaving him will usually enter into competition on the reduced scale. I seriously think we might do something in this direction, and agree upon a scale of fees which, if carried out honestly, would benefit all parties. I maintain that these low fees are a great mistake, which, I am afraid, is greatly due to want of confidence in ourselves. Why should we keep ourselves in poverty for the sake of doing our neighbour out of a client? I am sure the public will think none the worse of us for claiming reasonable remuneration for our services; in fact, I feel it would raise us in their estimation. Professional men should carefully avoid a practice which I fear is too common, of commenting adversely upon the practice of their

brethren—a most reprehensible act, especially on cases which the critic has never seen. I should like to make a remark upon the conduct of consultants. When practitioners meet in consultation great care and circumspection should be observed, so as not to throw any slight or discredit upon the regular attendant. The consultant has a decided advantage over the regular attendant, and he should be extremely careful not to so exercise it to his own advantage. There is one point in this connection I will mention, and that is that some experienced practitioners are apt (perhaps unconsciously) to air their superiority of intelligence, knowledge, and experience, in a way that may unfavourably impress the client against his regular attendant. All matters in a consultation should be privately discussed by the surgeons engaged therein; and in communicating the result of their deliberations to the client the use of the first person singular should be avoided, and the first person plural only be employed. Were a little more care and circumspection used, I feel that consultations would be more frequent and satisfactory than now obtains. We are on the eve of another election of our representatives on the Council, and I would remark that we should carefully weigh the qualifications of each candidate before recording the vote. I am of opinion that the rural and general practitioner is not sufficiently represented on the Council, and I deplore the fact that the profession is limited in its choice of a candidate to the Fellows. I would rejoice to see a repeal of that enactment whereby the profession is debarred a more liberal and extended choice of representatives. I believe that many excellent men are thus debarred offering their services on the Council, and I still hold to the belief that the limitation of the 9th clause is detrimental to the best interests of the profession. I disagree with the dual post of Councilman and Examiner; and I regard the matriculation examination as little short of a sham, and a disgrace to the profession. Fuller reports of the Council's proceedings would be a great advantage to country practitioners, and by another year or so, if the *Veterinary Record* continues to furnish us with reports similar to those which have already appeared, we shall be better able to estimate the value of our representatives, and to know how to act when election times come round. There are many other matters connected with veterinary politics that might be discussed, but I do not think the Society should bind itself, but discuss the qualifications of the various candidates, and then leave each elector free to vote for the man or men who may seem most likely to represent his views in the Council-chamber. We should urge our claims to public recognition on all matters of animal sanitation and hygiene affecting the public health. I claim that the Dairy and Cow Sheds Order should be under veterinary supervision; and in all matters concerning the communicability of animal diseases to man the veterinary profession should take its proper stand with the practitioners of human medicine. Who is so fit as the veterinary surgeon to pronounce upon the quality of our meat supply? I think it is high time that some restrictions should be placed upon the traffic in diseased meat. It is positively revolting to know the class of meat that is dressed and sold for human food. In my district it is a very rare thing indeed for an animal to be buried, no matter how it may have been drugged and doctored. I have known animals that have died and stiffened dressed and sold for food. I have also known animals that suffered from Anthrax, Septicæmia, Pulmonary Gangrene, and diseases in the most advanced stage dressed and sold for food, and that against the advice of the veterinary attendant. We, as a profession, should do our duty towards the public in this matter. I will not weary you further, gentlemen, but in conclusion ask the members, by their regular attendance, contributions, taking part in the discussions, and orderly conduct, to lend me their assistance to successfully conduct the business of this Society during the present year.

At the conclusion of the paper, which was received with applause, the PRESIDENT said, We have now to consider the next election of Councillors for the Royal College of Veterinary Surgeons.

Mr. GREAVES asked if this Association had on former occasions selected a representative.

Mr. DONALD: We joined on one occasion with the North of England Veterinary Medical Society to support Mr. Mulvey and Mr. Elphick. Mr. Campbell's name was then brought before us, but it was objected to by some of the members on account of his being a Fellow.

Mr. MCINTOSH: It was our intention then to support Mr. Elphick, so as to test the question whether or not we could force a member instead of a Fellow on the Board; and on that occasion I was one of those who objected to Mr. Campbell on principle, on the one ground that he was a Fellow. I read a paper either then or immediately after on the subject, and said all I could on the matter. I could not see why those of us who had complied with the requirements to become veterinary surgeons should be precluded from taking all the benefits belonging to the profession, and I am still of that opinion. We have plenty of men who are thoroughly qualified both as veterinary surgeons and in business capacity to manage the affairs of the Council equally with the Fellows. I am quite prepared to agree that the Examiners should be selected from the Fellows who have taken the trouble to get their degrees. That was the sole reason why on that occasion we objected to Mr. Campbell, and on that occasion we should have put Mr. Elphick in, only Professor Williams, who undertook to see to the matter, did not do so.

Mr. DONALD: I may say that the Secretary has received a letter from the North of England Society, asking us to support Professor Walley and Mr. Mulvey.

Mr. GREAVES: There is a good deal of truth and common sense in the observations of Mr. McIntosh, but he forgets the fact that in our profession there are a great many who are very apathetic in the way of progress. I do not deny that there are numbers of veterinary surgeons, not Fellows, who are quite capable and would do good work. Fellows, as a rule, are those who take an active part in the progress of the profession, who feel a deep interest in it, and because they show that desire to advance themselves and the profession they become Fellows. I don't say that they are all of that character. There are several men that will hold aloof, as our friend Mr. McIntosh, who is an able man and very fit and capable of becoming a Fellow, but he does not choose to put himself under examination to become one. We should be proud to see him a Fellow, but if he were elected to the Council to-morrow it might be that he would change, as others have done, and become a Fellow. As regards the dual appointment, I can tell you that the Fellows who are elected Examiners are elected because they are eminently fitted for the purpose. They are men who have studied and fitted themselves to become eminent in their profession, and when a man has advanced himself to that stage he is not only a valuable Examiner, but a valuable Councillor. We find those members who are Examiners are such as the Council could ill spare, and I for one should be very sorry to see them not members because they were Examiners. I should prefer, ifit were decided that they must be one or the other, that they be members of Council, but the profession would be losers. At present I do not see the force of the argument against it, and I should be very sorry to see anything done to prevent it. But, gentlemen, you cannot prevent it unless you get another Charter, and to do that would cost £600 or £700, and the apathy in the profession is such that you will have great difficulty in raising such a sum. I think we cannot do better than remain as we are.

Mr. CAMPBELL: I am an interested party—I don't know whether I should

say unfortunate—but I am in the position of being both an Examiner and a member of Council. If you will look at the matter broadly you will find that it is extremely difficult for the Council to elect competent Examiners. A member must be satisfied that the party whom he appoints is fitted to be on the Examining Board, and that he is perfectly competent to carry out the duty; and in order to do this a member must be well acquainted with the candidates; he must have full knowledge himself—or have the authority of some one upon whom he can conscientiously depend—that the party nominated is a competent authority. The members of Council created the Fellowship degree with the desire of elevating the profession in its social standing and scientific bearing. I say that any member of the profession who has opportunities for doing so should study his work, and go up like a man, and pass the examination for the Fellowship. The Council, in order to stimulate members of the profession to go in for the examination, have passed a bye-law abolishing the preliminary test, and leaving the examination wholly in the hands of the professional Examiners. So that now you do not require to pass the Dean of Preceptors at all, but simply the professional Examiners. I am very sorry to hear of this agitation beginning. I represent the Scottish Societies, and so long as I have the honour of representing them I will vote as they direct, so that I do not consider myself an independent member. Still I have my own private views in the matter.

Mr. ARMSTRONG: I beg to move that this Society do not pledge itself to support any particular candidate, but that every member vote as he thinks best.

Mr. TALLONTIRE: I beg to second that.

Mr. CAMPBELL: If I may be allowed, as a visitor, to give an opinion on the selection of members of Council, I would remind you that Mr. Mulvey was nominated by the Societies of the North of England, and no one can say that he has not faithfully discharged his duty. Mr. Mulvey has acted in a most straightforward way as the representative of the Societies, and I think every one will agree with me when I say that I may say the same of Professor Walley. He is well known as a representative in his professional capacity; he has spent a great amount of money in furthering the interests of the profession, and if you at any time ask him to come forward with a paper he is willing to do so.

Mr. FAULKNER: I should like to say that there are few more important topics than this one for our attention. I do not think that the fact of a candidate being a Fellow should debar him from the Council. It is well known that some members who are Fellows hold much the same views as a good many of you—more particularly as to the 9th clause; a number of gentlemen who are Fellows and members of the Council think, notwithstanding, that an injustice was done in the past, and if there was any remedy for it that it should be applied. We all have our own individual opinions, and look at things differently, but I hope in an unbiassed way. I confess I was surprised when I heard the remarks which fell from Mr. Campbell, who agitated the question of the 9th clause many years ago, saying that it was manly to turn completely round and act diametrically opposite to what they originally stated they were disposed to do—he and I don't agree as to what is "manliness." As I understand Mr. McIntosh, he thought that all members of the profession should be eligible for election to the Council, but that the Examiners should be selected from the Fellows. As to the latter part I take a different view. I maintain, and I have always maintained, and unless I see good reason to change I shall still maintain—I never yet met the man who could prove to the contrary—that when a man gets his diploma with that diploma he gets certain rights and privileges, and if he continues a respectable member of the profession I hold that those privileges should not be

taken away. There has never been any good reason for taking them away. I hold that it was an injustice to prevent a large portion of the profession from holding positions of honour in it. With regard to certain questions which will be very much before the profession in the coming election, one of which has been alluded to, viz., the dual appointment of member of Council and Examiner, I agree that it is wrong in principle, and if any gentleman can show it is right I will yield my position. Had Examiners not been members of Council we should have had a different investigation and a different result of the recent unpleasantness which occurred in Edinburgh. The Council was sitting in judgment upon itself—I don't say who was right. I quite agree with Mr. Greaves that the members of Council who are Examiners are good men, but I hold the principle is wrong. Another subject occurs to my mind, and it is that the whole of the Council, Vice-Presidents as well as members, ought to be elected by the profession. Vice-Presidents are now elected by the Council alone, not by the body of the profession, as they ought to be. I think that the fact of a man being a Fellow should be no objection to his election on the Council, because there are many Fellows who are perfectly at one with the views I have expressed, and perfectly sound at heart on this question.

Mr. McINTOSH: I should just like to say another word on this question, and it is this, that my idea from the beginning has been that there are business matters connected with the government of the profession from which the bulk of the profession are excluded. I have no fault to find with the Fellows taking a distinctive position. What I hold is this, that at the time this rule was put into force a distinct and great injustice was done to those members who did not qualify, and all chance of participating in the full benefits afforded by the profession was cut off from them. Our profession is so slow to act that the £600 or £700 mentioned by Mr. Greaves would probably not be raised; but if the members were simply to withhold themselves, and pay nothing into the funds of the profession until such times as we had our grievances righted, they would find some good result. We have a right of property taken away by that clause. Why should the Fellows monopolise the whole management of the profession to the exclusion of the others? I have refrained from attempting to take the degree on principle. Many members neither have the time nor the desire to take the Fellowship and pay the fee, and it is certain we cannot all become Fellows. Then why, in the name of all that is good, should they be deprived of all the benefits while at the outset they had these benefits? That is the strongest ground of objection I have. Gentlemen may become Fellows, provided they do not feel as I do, who have taken up a principle and adhered to it.

Mr. CAMPBELL: May I be allowed to make an explanation? Perhaps you may have received a wrong impression as to my view of the position of members of the profession. You are well aware that when I became a candidate I communicated my views in a plain manner by circular, in which I stated that I thought that the passing of a law taking away what I considered was the birthright of every member was iniquitous, that I would oppose it might and main; and my view was then, and still is, that it was a wrong law entirely, this taking away of members' privileges, and that view was distinctly stated.

Mr. Armstrong's motion was then put and carried.

Mr. McINTOSH then read a paper, "On a Case of Laryngeal Obstruction," illustrated with morbid specimens; after which he desired the opinion of the members as to whether what was known as a "grunter" was the result of disease or conformation, and whether, when the animal was neither a roarer nor whistled, but merely grunted, it was unsound.

Mr. CARLISLE, referring to the obstruction, thought that tracheotomy might have been adopted, and time thus given for closer examination.

Mr. GREAVES: This is an interesting specimen and an unusual case. I have never seen a case like it. I think that the horse might have been kept alive for a few days by putting in a tracheotomy tube, but the chances are that the horse would have died whilst the operation of removing the tumour was being performed. Probably the blood would run down the larynx, getting into the bronchial tubes, and he would die of inflammation. I don't think any one could have diagnosed the case more correctly. It was exceedingly peculiar.

Mr. MCINTOSH: The symptoms occurred perhaps two or three times in the twenty-four hours. There was no continuous difficulty in breathing. It was while attempting to swallow solid food, as with a carrot I gave him, that all the characteristic symptoms were produced, so that it was difficult to determine what was the obstruction. This continued eight days from the time I first saw him, but the tumour must have been there longer than that: I believe it would take months to grow. He made no noise in his breathing.

Mr. LITTLE mentioned a similar case within his experience. It was a colt about ten months old. It had these fits for two or three months, but I only saw it have two. It had never been haltered, and the last day it was alive we tried to put one on, and I proposed tracheotomy, but the owner thought that when it came out of the fit it might be adopted, but in the morning the horse was dead. He did make a great deal of noise during the time he was in the fits. If there had been a tracheotomy tube put in that animal I have not the least doubt that I could have taken off the tumour. I have seen one or two somewhat similar cases without tumours, caused by getting horses out that were "mired," and when the halters were not put on properly.

Mr. MCINTOSH: The question of tracheotomy could only occur to a person looking for a short time at the animal. The difficulty in breathing did not last more than two minutes; at other times he was perfectly free in the breath. It was only after he took solid food that this tumour became pressed on the epiglottis.

Mr. CAMPBELL: I think it would be very interesting if we knew the nature of the tumour (it was subsequently cut up). He thought a tracheotomy tube should have been tried. This is a pharyngeal tumour, and not a laryngeal one. I had a similar case, where a polypus formed in the larynx. It produced a great noise, and I at once passed a tracheotomy tube into the animal. It went on for six months, but the cartilages gave way, and it interfered with the animal swallowing, and this was the result—a large mucous tumour in the larynx.

The specimen was handed round and cut into, and the PRESIDENT suggested that it be sent to Professor McFadyean for microscopic examination, and its exact nature ascertained, which was agreed to.

Mr. MCINTOSH: As to Grunting, I am anxious to know whether, in testing a Clydesdale cart-horse, for instance, he is neither a roarer nor whistler, but if you strike him he grunts, is he to be considered unsound? In other words, is Grunting *per se* unsoundness?

Mr. GREAVES thought he was unsound if he grunted. He is a roarer if he grunts. At our establishment, if they grunt I consider them unsound, but we have discretionary power, and unless the grunting is very bad we pass them, and we have not one case in ten years come back on our hands. I have seen light horses that will grunt if you raise your hand ever so gently, but if you galloped them they could not be made to whistle or make a noise. We never reject a horse unless he roars very much indeed.

Mr. CARLISLE: A horse may be thoroughly tested in every respect and his wind be good, but if you strike him he makes a noise. Is it nervousness? and

is he unsound? There is plenty of room for veterinary surgeons to differ on this question. I should say he was unsound.

Mr. GREAVES: So would I.

Mr. FAULKNER referred to a case where his opinion had been asked on a horse which had hunted the previous season; he gave it as his opinion that he was sound enough for harness, and would do his work satisfactorily, but if he hunted another season he would undoubtedly make a noise. Another case was that of a roarer: "I put in one of Jones's tracheotomy tubes, and immediately the noise ceased." My idea as to Grunting is that it is due to the expulsion of air, because this horse, directly you lifted the stick, brought the air through the tube. I think he is unsound, and if he is not a roarer, then he will become one.

Mr. BELL: The noted prize horse "Erl King," as a two-year-old, was a grunter, and he never became a roarer in his gallop. He was examined by nearly every well-known veterinary surgeon in England, and a good many in Scotland, and he was always passed as sound. He was objected to at a local show, when two years old, on account of his grunting. I examined him, and gave him a very severe test, and my opinion was that he was sound.

Mr. GREAVES: What is your opinion of the causes of Grunting?

Mr. BELL: I think it is an involuntary sound, which may be made without disease being present. It is a well-known fact that if a man is hit suddenly in his ribs or abdomen he grunts. Now, is there any unsoundness in his wind? Does it arise from disease? I have experienced the fact that horses which grunt in early life have become roarers and whistlers, but I don't know that this is indicative in every case—that because a horse grunts he is unsound and will become a roarer. If you attempt it, you can make horses grunters by habitually striking them. Nervous horses will constantly do it. I have never examined the larynx of a grunter to ascertain whether there was disease, but there is a probability that there is none. In "Erl King's" case he was put to severe tests, and up to the time of leaving Mr. Fearon's hands he was perfectly sound in wind, and he was then twelve or fourteen years old.

Mr. HOWE mentioned a case where he had tested the animal up a hill without making him give out a noise, but if you strike him suddenly he will make a noise. I don't think it is anything but fear.

Mr. CAMPBELL: My opinion is that a grunting horse has no relation at all to a roarer. You may have a roarer and a grunter at the same time. I think they may be quite distinct. Grunting is just the same as striking a man in the ribs; he will give a grunt simply because it is an act of expiration. It is a physiological act. A nervous animal first holds his wind, expecting the blow, and after that lets it go. You can make a horse grunt in a very few weeks or days, or perhaps at once, by habitually hitting him. The distinctive characteristic of a roaring horse is that the sound is produced by inspiration. This matter should be particularly settled, and I think that when our friends say they have condemned horses as grunters I would have them see them at work. They would then see that they are good, honest, working horses.

Mr. FAULKNER: I can find a large number of roarers that do grunt, and I assert that you have a far larger proportion of roarers that grunt than of sound horses that are grunters.

Mr. MCINTOSH: I have had a difficulty, on being asked for my opinion upon a horse that neither roared nor whistled, but which grunted, as to whether I could pass it as sound or not. My own impression is that a grunter is predisposed to Roaring.

Mr. GREAVES: My friend Mr. Bell says if he strikes me I shall make a noise from fear, and a horse will do the same; but how does it happen that you

may strike thirty, and only one perhaps makes a noise? There is a cause for their not grunting. The grunter, if he takes a cold, will nearly always end in a roarer. I say a sound horse has no right to make a grunt, and strike him as often as you like, will not grunt.

Mr. CAMPBELL: I don't recognise Grunting as a premonitory symptom of Roaring.

The PRESIDENT closed the debate, and the members adjourned to the dining-room.

JOHN ARMSTRONG, *Hon. Sec.*

THE CENTRAL VETERINARY MEDICAL SOCIETY.

AT the meeting of the Society on 4th April, at the conclusion of Mr. Hunting's paper on "The Teaching and Examining of Candidates for the Diploma"—

Mr. RAYMOND said he did not consider a written examination was necessary to the veterinary student. If the candidate was efficient he would be able to answer the questions submitted at the examination tables with deliberation and success.

Professor AXE said the writer of the paper had dealt with an important and difficult subject in an able and exhaustive manner. He felt it a compliment to the schools and the existing system of teaching that so thorough and painstaking a champion of educational reform could find so little to disapprove of in the curriculum now adopted by the several teaching institutions of the country, and he was pleased at the same time to recognise the importance of some of the suggestions which had been made in the direction of modifying and enlarging the educational course. The author of the paper had disclaimed any right or desire to meddle with the details of teaching; but it was his (Professor Axe's) opinion that any modification of or addition to the existing state of things must be dealt with on the broad basis of details, and not on an abstract consideration of the question. It was impossible to legislate for the education of the veterinary students without some reference and regard to the machinery of the schools, and he hoped that in the course of the discussion which would follow the excellent suggestions of the essayist would be tested by the resources of those in whose hands the education of the student rested. He quite agreed with Mr. Hunting that it was imperatively necessary that the standard of education, scholastic and scientific, should be kept on a line with the requirements of the times, and no one, he believed, desired the consummation of this requirement more than the authorities of the various Colleges, and they would, he was sure, welcome and give the fullest consideration to any practical suggestion which might be made for bettering their position in this important connection, and for furthering the advancement of professional education. He (Professor Axe) had for years recognised and urged again and again the unity of the science of pathology; and he was glad to say that the Camden Town School had ceased to consider the pathology of cattle as a branch distinct from the pathology of the horse and other animals. There could be no doubt that disease processes throughout animal life were initiated, directed and controlled by the same natural laws; and while recognising modifications in the clinical manifestations of disease in different creatures, he saw in this no sufficient reason for continuing to waste the time of students in a repetition of details which only serve to weary and worry, and create disgust rather than a pleasurable interest in the work before them. It would therefore be seen that they had anticipated in their system of tuition the suggestion which the essayist had made in respect to the examination of the student in the subject of pathology, and he trusted that the Council would see their way to arrange the examinations in this respect in accordance with the more

rational principle indicated by the writer of the paper. He was glad Mr. Hunting had called attention to the necessity for more scientific information in regard to hygiene, to which he thought should also be added the principles of sanitation. There was no doubt that the time had now arrived when these subjects should occupy the first rank in our educational course. He (Professor Axe) was aware of the difficulties attendant upon any considerable extension and rearrangement of the curriculum of a school, but he could not shut his eyes to the fact that much remained to be done ere the veterinary student could claim to have received a thorough and rational education. It was certain that rapid strides in the direction of progress had been made during the past twenty years, and the profession had much to congratulate itself upon; but he could not help thinking that the all-important item "preventive medicine" had been too long left out in the cold. He should welcome its addition to the demands of the Royal College, and would be glad to see it take a forward position in the curriculum of every veterinary school. He thought Mr. Hunting had not been happy in comparing the present-day teaching of chemistry with that which existed in what he has been pleased to term "the dark days of professional ignorance." He would remind him that at the period referred to practical chemistry had no existence in any veterinary institution, and the prescribed course was then both limited in amount and elementary in character. At the present time the subject was not only more thoroughly taught, but taught on a more comprehensive scale, and he believed that more time was devoted to it now, during the seven months and a half, than was formerly given to it in the course of the two six months sessions. What was still more satisfactory, every student was compelled to make it a practical study. Notwithstanding this, he believed the system of teaching chemistry might be improved by devoting the first period of the session to theoretical chemistry, and the later period exclusively to its practical application. In dealing with the subject of anatomy Mr. Hunting had not done justice to his experience as a teacher and his general knowledge of the educational requirements of the student. For himself he thought it most desirable that a student should thoroughly study and master the anatomical details of the passive organs of locomotion before he was permitted to enter upon a consideration of the active. The bones were the landmarks of muscular attachment, and with these the mind should be well impressed before dissecting of muscles was permitted. Nothing served so much to render dissection distasteful, and to lead to mutilation and waste of subjects, as a want of that light to the attachment of muscles which a complete knowledge of the bones offered. As to the articulations, they too, like the bones, must of necessity be studied first apart from the muscles, and only in this way would a rational understanding of their mechanism be obtained. The existing plan of teaching and examining in the subject of anatomy appeared to him to be most satisfactory, and should not be changed unless a substantial improvement could be effected in it.

Mr. SHEATHER strongly advocated a written as well as an oral examination. Written examinations would be useful because they would form a check on the examiner, for there remained on paper what the examiner had asked and what the student had written; but in written examinations it was very necessary the examiners should be experienced, for some questions would admit of being answered in three or four different ways, and each be reasonable answers. The questions should be few in number, and ample time should be allowed the student to give the question a proper consideration. To give a candidate a number of questions to answer in a short time would be the means of making him answer the whole badly.

Mr. HURNDALL also strongly advocated a written as well as an oral examination, because a written examination helped a nervous man. Mr. Hunting

had not gone into the question of preliminary examination as deeply as he had expected he would have done. He (Mr. Hurndall) considered the student should have a fair knowledge of Latin and some knowledge of French, and that steps should be taken to make the preliminary examination more stringent, in order that they might get men of greater calibre.

Mr. HENRY EDGAR regarded the present system whereby a student was allowed to join the teaching schools in the middle of a session as most objectionable. When he commenced his studies at Camden Town he found himself in the middle of anatomy before he had been through the elementary part. He thought it was most necessary to introduce the teaching of hygiene and sanitation at our schools, and it also appeared to him that the time had come when "materia medica" and "therapeutics" should be carefully and fully gone into, so that the greatest possible advantage might accrue to the students. The question of the fees of the schools was important. In London they amounted to forty-five guineas. They could not expect a boy twelve years of age to receive a three years' education for so small a sum. To raise the fees would be to raise the standard of the profession and would be more fair to the schools.

On the suggestion of the President, the discussion was then adjourned to the next monthly meeting.

An ordinary general meeting took place on Thursday, May 2nd.

Alfred Broad, Esq., the President, occupied the chair. Present, twenty-three Fellows of the Society and three visitors.

Mr. Alfred Prudames, M.R.C.V.S., of Berkhampstead, and Mr. H. C. Legge, M.R.C.V.S., of Dorking, were unanimously elected Fellows of the Society, and Mr. G. Reddish, M.R.C.V.S., of London, was nominated for Fellowship.

The PRESIDENT exhibited a portion of the intestine of a dog with a pebble (which the dog had been seen to swallow) impacted in it, and Professor Axe brought before the meeting a portion of the walls of the stomach of a yearling colt which was deeply ulcerated; the colt had died from Tetanus. This specimen excited an animated discussion, in which Professor Axe, Messrs. Mulvey, Edgar, and other gentlemen took part.

The discussion was then resumed upon Mr. William Hunting's paper on "The Teaching and Examining of Students for the Diploma." The President pointed out that there were many points in Mr. Hunting's valuable paper worthy of their best consideration. He thought they would all agree that his suggestions as to the introduction of the science of hygiene into the curriculum of schools and the adoption of written examinations would be decided improvements. He agreed with the essayist that the study of anatomy, physiology, and chemistry should be spread over a larger period of time, as forced and rapid studies were apt to be soon forgotten. He hoped the meeting would see its way to appoint a committee to thoroughly consider the subject, as suggested at the last meeting.

Mr. EDGAR repudiated the essayist's suggestion that practitioners cannot combine a first-class knowledge of all diseases of all animals. He thought such an assertion was rather an insult to them. No doubt some gentlemen make a certain class of animal their special study, but he did not consider this rendered them any more qualified to be examiners, but it might narrow their knowledge of the various forms of pathological changes met with. In his opinion the man who had a good practical all round knowledge of pathology was the one to find out what a student knew. Specialists were very apt to have fads and fancies. He would ask for more prominence to be given to canine pathology and surgery, for he regretted that there was so little attention given to this important subject. Canine pathology was very imperfectly taught, and he was not asked one question on it by any examiner. Surely this was not right when dogs were occupying such a prominent

position in public estimation. He must also take exception to the essayist's remark that "obstetrics are chiefly applicable to the cow," for the most difficult cases were met with in the mare and bitch. He certainly preferred the suggested new classification to the old, and he also wished for written examinations, believing that they would more fully test the student's knowledge. He did not think it would be an advantage to reduce the number of the examinations from three to two, nor could he see any objection to the first or class "A" examination. He thought hygiene could be more conveniently added to this than to either of the other examinations, because he believed there was plenty of time during the first twelve months for that subject to be well mastered by the student. He now came to the most important part of the paper—the selection of examiners: this was one of the most important duties the Council had to perform; and although he had not the slightest objection to any gentleman naw holding that position, he did most emphatically object to the examiners having a seat on the Council. If it was an honour to occupy a seat on the Council, and remunerative to be an examiner, why confine it to a few? It was wrong in principle, and he thought that they, as the leading Veterinary Medical Association, were justified in entering their protest. The time would come when the dual office would not be tolerated. If a gentleman on the Council be appointed examiner, let him retire from the Council, and let the vacancy so made be filled up. Now a member of the Council might vote for himself as examiner. Again, he objected to examiners being elected for five years; they might also as well be elected a lifetime; two years, in his opinion, were quite sufficient, and it was no trouble to re-elect them if advisable. He agreed that the examiner who took the practical examination should also take the oral, because in his experience he had almost the same questions put to him at both examinations. As to the Matriculatory Examination, he thought that 25 per cent. of marks passing a man was a disgrace, and that at the very least 50 per cent. of marks should be obtained.

Mr. HURNDALL said it was quite impossible to criticise all the points in this paper which deserved their attention, for he had no doubt they would all agree with him that there was scarcely a sentence which might not usefully be discussed, and he was certain it must have taken a great deal of thought and time to prepare it. Mr. Hunting said, "Nay, it appears even probable, when we consider that the Council may be roughly divided into two classes—examiners and teachers, who, from previous associations and unconscious bias, would naturally propose no radical change; and practitioners and others, who, from their training and position, cannot be expected to have very definite ideas about teaching or examining." Now he took exception to that; he did not know why a man, because he was a practitioner, should not be able to teach, and if he was qualified to teach he was qualified to examine up to a certain point. But here came in the difficulty: he did not agree with Mr. Hunting that if a man be endowed with a power of teaching, therefore he must be qualified to examine. One of the greatest essentials in an examiner was that he should know, not how to find out what a man did not know, but to find out what he really knew. He had had conversations with young men as to their experience under examination, and in a number of instances he had heard it expressed that there was a tendency to stick to one subject; he did not think that was the way to find out what a man knew. Again, the demeanour of the examiner often perplexed the candidate; that was one reason why he strongly advocated written examinations. There was another point. Mr. Hunting said "the first division (Medicine, Surgery, and Pathology) would have two examiners." He (the speaker) questioned if that would be desirable, because it was a most important thing to distinguish very particularly between what was called Pathology and Morbid Anatomy; it was

most essential—if they were to progress with the times, and able to take their stand with the sister profession in illustrating many points which they now claimed to be able to do—that they should have a distinct and clear understanding upon Morbid Anatomy; and to have one table for that subject was certainly not too much. He was quite at one with the essayist, that in the matter of Therapeutics they were woefully behind. Professor Brown, at the opening of the Camden Town College, spoke rather slightingly of the value of Therapeutics (a member: No! drugs). He might be wrong, and would be only too willing to admit it, but that was the impression left on his mind. Therapeutics was a valuable subject, and he thought if a special course of lectures were given upon it, it would be to the advantage of the student. He agreed with what Mr. Edgar had said as to the examiners sitting on the Council; it was a matter which must be brought to the fore, and if the gentlemen who sat on the Council did not feel that the opinions expressed by the profession were sufficient to demand their attention, well, they must go on discussing the matter until they do; time would bring it about, no doubt. It was an unfortunate thing that some little consideration was not shown on the part of the Council to the wishes of the profession. One point Mr. Hunting had not touched on was the fees for entrance and passage through the curriculum of the College. £45 was a perfectly inadequate sum, and did not enable the College to do its duty by the student. He certainly advocated the formation of a committee to thoroughly go into the matter from beginning to end, and to make suggestions which would be submitted to the Council.

Mr. SIDNEY VILLAR said the essayist had pointed out the responsibility which rested with each one of us as to the qualities of every new man who was admitted into the ranks of our profession; and no doubt this paper would act as an excitant, and cause at all events some of us to consider this important matter of examinations and examiners more seriously than we have hitherto done, especially as Mr. Hunting tells us that he thinks "that our existing arrangements for the admission of men to the profession are positively evil." But although he (Mr. Villar) had read his paper carefully, he was unable to find that he points out where such positive evil exists. Under the heading "What should entitle a man to receive our diploma?" he is apparently content with existing arrangements, except that he would do away with the special tables on Cattle Pathology and Morbid Anatomy; would have a separate table for Materia Medica and Therapeutics, and would make the science of Hygiene a test subject. As regards Hygiene, under which head he includes stabling, feeding, and shoeing, nine years ago, when he (Mr. Villar) obtained his diploma, an extensive knowledge of all these details was required to enable a student to pass the practical part of his third examination, and he had no doubt the same obtains now. At that time there was a special table for Materia Medica, and it seemed a pity it should ever have been allowed to drop through. He hoped Mr. Hunting's suggestion as to the institution of a special table for the subjects Therapeutics and Materia Medica would receive favourable consideration, but could not help thinking it would be disastrous to do away with the special table on Cattle Pathology, more especially as he noticed Mr. Hunting, in his suggested curriculum for the use of schools, makes no special provision for teaching this important subject. Although many of the diseases of cattle come under the heading of "Contagious and Parasitic Diseases and Obstetrics," still there are many other diseases which could not be included in either of these classes. In country districts, where most young veterinary surgeons commence practice, the treatment of cattle is of equal importance with the attendance on horses, and he thought, instead of throwing cold water on this important subject, as would undoubtedly be done if Mr.

Hunting's suggestion was carried out, we ought rather to do all in our power to draw increased attention to it. Mr. Hunting also says, "Whatever standard of excellence we require the average candidate to reach, will be the level of the school teaching." Now, I don't think he is fair in this statement; I could name several subjects in which the standard of examination at Red Lion Square is much below the lines of the teaching at Camden Town. Again, he objects to the present method of examination in anatomy; he does not consider it advisable to have a special table for osteology and syndesmology. Here, again, I venture to disagree with him, for now-a-days a man must thoroughly know his bones, or he cannot get out of Class A; whereas before the existing arrangement came into operation many men who passed knew well the minute anatomy of the brain and kidney, but were unable to recognise individually the bones of the knee or hock. Mr. Hunting considers the study of chemistry, anatomy, and physiology should go on concurrently; but I think the present arrangement, whereby a man must have a good knowledge of chemistry and some knowledge of anatomy before he is allowed to commence the study of physiology, is more reasonable, and more like to lead to better results. I do not consider a summer session is necessary for the study of botany, although it would of course be beneficial. It is still a fortnight before the examinations commence at Red Lion Square, and there are now in our hedgerows flowers typical of a large number of natural orders, and many of these have been in bloom for weeks; so that if a student feels inclined, he has a good opportunity of practically studying botany. Mr. Hunting strongly advocates the adoption of written examinations; and with all which he says on this head I agree, except that I do not think the average student can do a written examination on any one subject in half an hour. To do well at written examinations a man requires practice at that class of work. Mr. Hurndall had suggested that both Latin and French should be made obligatory subjects at the Matriculation Examination, but I think it would be better to so include only one language, and to make elementary chemistry or elementary botany, or both, obligatory; because the period of study at the veterinary schools is now short, and a little useful information on these subjects is bound to be beneficial to the student, and would assist him in his future studies at college.

Professor AXE said he had already pointed out that any change in the existing system of examining and teaching must be considered on the broad basis of detail, in order to make the one conformable to the other. Mr. Hunting had proposed to abolish the first examination and to reduce the number to two instead of three. In the first he proposed to include Anatomy, Physiology, Chemistry, Botany, and Hygiene, and to carry on the teaching of these several subjects for two years. It had been pointed out by him as undesirable that students should enter the schools in the middle of a course; but if the suggestion of the essayist were adopted the schools must either close their doors to students one year in three, or they must admit them, as it appeared to him, in the middle of a prolonged course. It had to be remembered that the subjects included in the first division of the curriculum laid down by Mr. Hunting were vast and important ones, and entailed an immense amount of work, and he believed they would be better taught, and understood, and retained by the student in the existing small groups, than in the larger one set down in the paper. He (Professor Axe) saw insuperable difficulties in the way of adopting the system suggested under existing circumstances. It was, he thought, most desirable that the labour of the student should, as far as possible, be divided, and the confusion and embarrassment arising out of the study of a multiplicity of subjects at the same time avoided. From a long and large experience as a teacher, he felt that the development and consolidation of the existing system would be

more advantageous than change. Referring to the question of Canine Pathology, Professor Axe said that the subject had recently received more attention than at any former time, and he hoped still more would be given to it in the future. He could not admit that the subject was imperfectly taught, although he was aware it might and would be more extensively dealt with.

Mr. KENDALL (of Hitchin) was in favour of a committee being appointed to consider the whole subject, and forward any suggestions to the Royal College of Veterinary Surgeons. He could not agree that botany could be properly studied in the winter session. He was certainly in favour of written examinations, for it seemed to him that in oral exams. the man with the biggest amount of "cheek" did best, and the nervous man never seemed to get on; but if the written examinations were adopted more than half an hour must be given to each subject. The formation of a canine table would be more or less valuable to town practitioners, but he thought country practitioners had an equal right to demand a table of sheep pathology: he was confident that there was a great future before them in the study of ovine diseases.

Professor PRITCHARD, as President of the Royal College of Veterinary Surgeons, remarked with regard to the Matriculatory Examination, that the Royal College had the power to question the schools as to the educational test they put the candidates for admission to their institutions, but it had never been called upon to do so; the schools were given credit for testing their pupils in a proper way.

Mr. ARTHUR ROGERSON said he was inclined to agree with Mr. Villar in the objections he had raised to Mr. Hunting's proposed curriculum. If Mr. Hunting's ideas were carried out he thought the students would get tired, and lose heart through having to wait so long for their examinations. As to the study of botany, it could be carried out practically at this time of year, when there were plenty of plants to be met with in the lanes and hedges. Speaking of the Final Examination as now carried on, with a division into Theoretical and Practical parts, he said the student who passed his theoretical but failed in the practical was sent down to practise with some veterinary surgeon, but it was compulsory that he should attend the College lectures for one month previous to again presenting himself for examination. Now, he did not think there was any necessity for such a regulation; it put the student to great expense, and the practitioner to great inconvenience. He had been in conversation with students about this, and they all seemed to think it was wrong to make this month's attendance compulsory; he laid this before them as a suggestion which he thought worthy of the consideration of any committee which might be formed.

The PRESIDENT then called upon Mr. Hunting to reply to the various points raised in the discussion.

Mr. HUNTING: I think I may feel some satisfaction in having travelled over such a lot of ground and met with so few difficulties and objections. Apparently most of my suggestions are accepted, and I need only just notice the most prominent differences which this discussion has evolved. Professor Axe says he is satisfied with the present system of teaching and examining as applied to anatomy. He very rightly argues that the bones should be thoroughly understood at the outset. I also hold the bones should be thoroughly understood, and it is for this reason I object to the present system. I say they cannot be properly learned unless dissection of muscles is part of the course by which they are learned. Still more is dissection necessary to learn the ligaments, and that not confined to mere ligaments, but embracing the muscles, for tendons of the muscles are often of greater value in enclosing and limiting the motion of joints than the special ligaments. Locomotion can only be understood by a study of bones and muscles *in situ*

—the active and passive organs together. Mr. Edgar thinks my remark that no one can be all round a first-class man reflects on the profession. He holds that a practitioner may be equally as clever with the diseases of horses as he is with those of cows and sheep. Well, I only judged by my self, and I know I am not. I simply know nothing of cows and sheep. Mr. Edgar could see no objection to the "A" examination, nor any advantage in reducing the three examinations to two. My idea is that the existing arrangements limit the teaching and cause "cramming," and that they compel an injurious subdivision of some subjects, with a very evil compression of others. Mr. Hurndall thinks my scheme would include the removal of an examination on Morbid Anatomy. It would not. I simply propose that it be tested at the same table as Practice of Medicine and Surgery, by an examiner who shall be a specialist. He also takes exception to a remark of mine which implies that few practitioners are fit for examiners. I do not think we really differ much. I only say a man may know his subject well, and yet not be able either to convey his knowledge to others or extract from them what they know. I believe that a good teacher will always make a good examiner, and that a man who could not teach is also a man who cannot examine. Concerning the inadequacy of £45 as fees for a whole College course, I will only say that if it pays the school it does no harm to the student, and is a good thing for the parents. I cannot allow that a higher fee, by excluding poor men, would be productive of any advantage. Mr. Villar says he does not see any evil in the existing arrangements. I can only refer him again to my paper, and to some of the remarks we have heard to-night. His own remarks include one or two suggestions which would make a decided improvement; as, for instance, the written examination and the special table for Materia Medica and Therapeutics. Mr. Villar is quite wrong in thinking I would detract from the examinations on cattle diseases. I would alter the name of the table at which special bovine and other diseases were tested, and I would examine on all the General Pathology at another table. I only suggest the alteration as one of convenience, and as avoiding the notion that medicine and surgery and morbid anatomy are distinct things in different species of animals. Mr. Villar's strongest point is where he takes issue with me about the first or "A" examination. He says, "Mr. Hunting considers the study of chemistry, anatomy, and physiology should go on concurrently, but I think a man should have a good knowledge of chemistry and anatomy before he commences the study of physiology." Now, this at first sight seems to be a fatal reply to my most prominent suggestion. As a matter of fact, I do not propose the exact concurrent study suggested. I should allow some chemical and anatomical progress to be made before physiology was taken up. My idea of a physiological course includes histology, and also the minute anatomy of each special organ, so that only an elementary knowledge of anatomy is requisite for a man to clearly follow the lectures. I hardly agree with Mr. Villar that our Matriculation Examination should include elementary chemistry or botany; but if it did we should have gone a long way to have entirely removed Mr. Villar's objection to my proposal. Professor Axe tells me that there are "insuperable difficulties" to my plan of having anatomy, chemistry, botany, and physiology taught in two sessions before any examination is applied. He says that were the subjects extended in a systematic course over two sessions, men who joined the school in the middle of a course would lose half their education, and this could only be remedied by refusing to admit any students one year in three. If this be correct, I must allow my scheme to be impracticable; but I hold it is not. When only two sessions were demanded we had to learn the subjects and pass in them. I only propose that two sessions be allotted to

Chemistry, Physiology, Anatomy, and Hygiene, including Botany. The third session I leave for Medicine, Surgery, Pathology, and Materia Medica, and Therapeutics. I do not suggest that the first four subjects should be extended as one course over two sessions. I should divide them, if necessary, and I should *repeat them*. Physiology I should most certainly repeat every session as a complete course, and I feel certain it would never be stale or unprofitable. I should hope that instead of a man being, as now, "crammed" in seven months, he would be really taught in the two sessions. Mr. Rogerson is of opinion that by delaying the First Examination for two years students would get tired and lose heart. I appreciate this objection, and would propose to enliven and sustain them by periodic written examinations, conducted in the schools by the Professors. I have not thought out all the details required to make my suggestions workable. I ask the teachers to help me to this. I have pointed out what I consider evils, and many of you acknowledge them. If they are evils we must try and find a remedy.

Professor AXE moved, "That a committee be formed to take into consideration the question contained in Mr. Hunting's paper, and that if thought desirable representation be made to the Council of the Royal College of Veterinary Surgeons of any improvement which might suggest itself to the committee in the course of their deliberations."

Mr. EDGAR seconded this resolution, which was carried unanimously, and the Council of the Society, with its *ex-officio* members and Messrs. Henry Edgar and J. S. Hurndall, were appointed as a committee.

Mr. WILLIAM ROOTS proposed a vote of thanks to Mr. Hunting for the very able manner in which he had defended his essay.

Mr. SAMSON had great pleasure in seconding this vote of thanks, which was carried with acclamation.

Mr. HUNTING having replied, the proceedings terminated.

ROYAL AGRICULTURAL SOCIETY.

AT the Council meeting held on May 1st Sir John Thorold stated that Professor Brown had presented the following report:—

"*Pleuro-pneumonia.*—Between the 16th March and 20th April thirty-three outbreaks of this disease were reported in Great Britain—eighteen in England, and fifteen in Scotland. This is a decrease of twenty-two, as compared with the corresponding period of last year. In the five weeks above referred to 100 cattle were attacked; forty-eight of these were in England, and fifty-two in Scotland. In addition to these, 550 healthy cattle in contact were slaughtered—161 in England, and 389 in Scotland. In Ireland there have been ten outbreaks in the five weeks, eight of them in Dublin, one in King's County, and one in Meath; twenty-four cattle have been attacked, and 178 healthy cattle were slaughtered because they had been in contact with the diseased.

"*Anthrax.*—There have been sixteen outbreaks of Anthrax reported in England in the five weeks, and two in Scotland. Twenty-two animals were affected in England, and three in Scotland.

"*Swine Fever.*—This disease is not quite so prevalent as it was about this time last year. The annual increase, which generally begins about the beginning of April, is scarcely noticeable as yet. There have been 422 outbreaks reported in the five weeks, and 2,076 swine have been attacked, of which 1,058, or a little more than half, were killed, 909 died, and 141 recovered."

In reference to the statements at the special meeting of the Council held on the 16th April, that the Government were ignorant of the existence of Foot-and-mouth Disease in Germany, Professor Brown had called the attention of the committee to the fact that in the annual reports issued from the

Agricultural Department the existence of Foot-and-mouth Disease, and the places where it existed in Germany, had constantly been distinctly pointed out.

The report of the Conference, held on the 28th and 29th March, of representatives of the three national societies on the subject of cross-Channel traffic in cattle, had been laid on the table. A letter had been received from Mr. David Evans, of Haverfordwest, accepting the appointment of Provincial Veterinary Surgeon for Pembrokeshire; and the committee, recommended the appointment of Mr. B. Freer, of Uppingham, as Provincial Veterinary Surgeon for the county of Rutland.

Various letters from residents in the vicinity of Windsor with reference to the present restriction of the area of competition for the prizes to shoeing-smiths had been read, and the committee recommended that the competition be extended to an area of ten miles round Windsor, and that the date for closing of entries at ordinary fees be postponed until the 6th May.

Professor BROWN said that at the meeting of the Veterinary Committee yesterday he pointed out that the tone of most of the speeches at the special meeting held on the 16th April appeared to be based on the supposed ignorance of the Government as to the existence of Foot-and-mouth Disease in Germany, and he asked to be allowed to call attention to the fact that the annual reports which were issued by the Agricultural Department had contained from the first a perfectly distinct statement of the existence of the disease in Germany, and had frequently given the number of animals attacked so far as their information extended, and the particular provinces in which the disease was most rife. He could not, therefore, understand the remarks which he read in the report of the proceedings, such as that the Privy Council were unaware of the existence of the disease in Germany, and that if they had known it they would not have made the Order; the fact of the matter being that not only the Privy Council, but also the public and the members of the Legislature, must have been perfectly well informed on the subject. It was well known before the Act of 1884 was passed that Foot-and-mouth Disease was existing in Germany. Indeed, it was impossible to read the 1st and 3rd sections of that Act without realising the fact that those provisions contemplate importation from a country where Foot-and-mouth Disease exists, as it would be absurd to provide for the Privy Council being satisfied of the existence of a reasonable security against the introduction of disease from a country in which no disease existed. With regard to Germany, he might tell the Council that they were always informed by the German authorities immediately an outbreak of Foot-and-mouth Disease occurred, and the German Government instantly on the discovery of an outbreak prohibited the export of animals from the district where the disease existed.

Army Veterinary Department.

War Office Gazette, April 23rd.

G. H. Fenton, late Veterinary Surgeon, whose retirement, receiving a gratuity, was notified in the *Gazette* of 2nd October, 1888, is restored to the Department as a Veterinary Surgeon First Class, ranking as Captain, and is absorbed in the vacancy in the establishment caused by the resignation of Veterinary Surgeon T. Caldecott. Dated 27th April.

Veterinary Surgeon on probation, R. J. D. Tibaldi, to be Veterinary Surgeon, ranking as Lieutenant. Dated 10th October, 1888.

Artillery Volunteers.—2nd East Riding of Yorkshire. W. Longhurst, gent., to be Veterinary Surgeon. Dated 24th April.

Gazette, May 10th.

Artillery Volunteers.—4th Lancashire. W. Walls Townson, gent., to be Veterinary Surgeon.

Gazette, May 14th.

The undermentioned Veterinary Surgeons to be Veterinary Surgeons First Class, ranking as Captains:—

Edmund Day	dated 17th May,	1889.
Charles Rutherford, F.R.C.V.S.	,,	,,	,,
Kay Lees, F.R.C.V.S.	,,	,,	,,
Frederick W. Forsdyke	,, 24th	,,	,,

Gazette, May 17th.

Fourth Volunteer (Cinque Ports) Brigade, Cinque Ports Division, Royal Artillery.—W. Plomely, gent., to be Veterinary Surgeon, dated May 18th.

W. A. Russell, F.R.C.V.S., Inspecting Veterinary Surgeon, will succeed G. A. Oliphant, F.R.C.V.S., as Principal Veterinary Surgeon in India, on the return of the latter to this country in the autumn.

Veterinary Surgeons, First Class, Burt and Davis have been granted an extension of sick leave from India. Veterinary Surgeon Appleton has arrived, in England on sick leave from India. Veterinary Surgeon, First Class, Anderson has embarked for a tour of foreign service in Egypt.

At the levee held by the Prince of Wales, on behalf of Her Majesty the Queen, at St. James's Palace, on May 8th, Veterinary Surgeon W. Owen Williams, Lothians and Berkshire Yeomanry Cavalry, was presented by the Earl of Haddington.

Obituary.

THE death of the following members of the profession has been announced:—

J. B. Jones, Ludlow, Salop, who graduated in 1837.
G. Harrison, Stafford, ,, ,, ,, 1842.
H. R. Bradshaw, Dublin, ,, ,, ,, 1874.

Notes and News.

ANTHRAX INOCULATION IN ITALY.—The Ministry of Agriculture has, in compliance with special requests from each of the localities, granted subventions to the veterinary schools at Turin, Bologna, and Pisa, to promote the practice of protective inoculation against Anthrax in the province of Sassari, and at Foligno and Civitavecchia, where the disease is causing great loss of cattle.

ANTHRAX INOCULATION IN RUSSIA.—According to the *Revue Scientifique*, the regretted Professor Cienkowsky had in Russia, from 1885 to 1888, protectively inoculated 20,310 sheep against Anthrax. The average loss was 0·87 per cent. In a flock of 11,000 sheep the mortality from Anthrax was usually from 8·5 to 10·6 per cent., but with inoculation it fell to 0·13 per cent. In an experiment made thirteen months after protective inoculation eighteen of twenty of these sheep resisted the action of Anthrax virus. These results are very satisfactory, and are calculated to popularise this preservative measure in Russia, where it should render great service.

PROTECTION OF THE VETERINARY PROFESSION IN THE UNITED STATES.—The Pennsylvania Veterinary Medical Association has undertaken the passage of a legislative act in regard to the regulation of the practice of veteri-

nary medicine, which differs essentially from those passed in the last two years in the neighbouring States of New York and New Jersey. The new form does not prohibit any one from being employed or from practising in any way, but it does prohibit any one from calling himself a veterinarian or from claiming any analogous title unless he is entitled to it. It affords a much more tangible means of charge for any misdemeanour. A card, a bill-head, an announcement of any sort, claiming practice on the part of the delinquent, lays him open to prosecution with ready proof of his guilt. The moderate limit of five years for non-graduates allows any "existing practitioner" ample justice for his *droit d'etre*.

RABIES IN ALASKA.—In Fleming's "Rabies and Hydrophobia" allusion is made to a disease closely resembling or identical with Canine Rabies occurring among dogs in Greenland, and even for some distance in the Arctic regions. With reference to this malady, Mr. Edward W. Nelson, in his recent report upon the natural history collections made in Alaska, speaking of the Eskimo dog, says, "There is a peculiar disease, very much akin to the madness of dogs in lower latitudes, which the Eskimo dog is subject to from Greenland to Behring Sea. A dog bitten by another afflicted with this disease becomes afflicted in the same manner in a few days. I made careful inquiry, but could learn of no authentic case where a person had been bitten, although I heard a vague account of a man having died at Pastolik from the effect of such a bite. The natives have the greatest fear of a dog in this condition, yet appear to have a superstitious dread of killing it. Both young and old dogs have the disease, and I have seen a puppy only a few weeks old afflicted with it in the most aggravated form. As a rule the first symptoms appear within four or five days of the time the bite is received. The dog refuses to eat, becomes restless and irritable, his head soon becomes swollen, and his vision is affected. He then has alternating periods of stupid quietness and aimless activity. During the latter he runs blindly about, staggering from side to side, but keeping with apparent difficulty a nearly straight course until something turns him. When moving about in this way he bites any dog or other living object in his path, and frequently runs blindly into some obstacle, from which he starts off in a right angle to his former course. During this time his eyes are fixed and glaring, and his head hangs down as if overweighed, and is slowly swayed from side to side. They are easily avoided, and if kicked out of the way they rarely renew the attack, and never with any spirit. The attack is sometimes preceded by a hæmorrhage from the nose and mouth. In rare cases a dog recovers, but usually they die in one or two days from the time of the first symptoms. During some seasons great numbers of dogs die from this cause."

DR. OSLER.—We have much pleasure in announcing that a valued and valuable contributor to the VETERINARY JOURNAL, Dr. William Osler, Professor of Clinical Medicine in the University of Pennsylvania, has been appointed physician to the John Hopkins Hospital, and Professor of Medicine in the John Hopkins University. Dr. Osler took his degree in the McGill University, Montreal. He subsequently studied in London, Berlin, and Vienna, and in 1885 was appointed Gulstonian lecturer in the Royal College of Physicians, London, and in 1886 Cartwright lecturer in the College of Physicians and Surgeons, New York. For some years he was a teacher in the Montreal Veterinary School, his retirement from which was much regretted.

COWPOX IN DENMARK.—In Denmark, in 1887, there were 349 cases of Cowpox reported. In the first quarter of the year there were 11 cases; in the second, 13; in the third, 18; and in the fourth, 12.

THE ARMY VETERINARY DEPARTMENT AT THE ROYAL ACADEMY AND GROSVENOR GALLERY.—In the last number of the Journal, a notice was given of Mr. Adrian Jones' (A.V.D.) beautiful statuette in this year's Royal Academy Exhibition. In the Grosvenor Gallery Exhibition Mr. Jones has been no less fortunate in obtaining a place for his other statuette, which has been most favourably noticed by the public press. For instance, the *Daily Chronicle*, in describing the sculpture in that exhibition, says, "A bronze group of 'The Last Arrow,' by Adrian Jones, is deservedly placed in the most conspicuous position on the central table in the principal gallery. The work, a most vigorous and masterly conception, shows us an American Indian buffalo-hunting. With his horse at wildest speed the 'brave' has galloped his noble quarry to close quarters, and with but one arrow left is taking careful aim in order that he may give the grand brute his *coup de grace*. The design is an extremely fine one, suggesting the mastery of man over the whole brute creation, whilst the special characteristics of the horse, excited by the chase, his savage rider, and of the formidable-looking beast whose home is in the prairies are splendidly given. One is disposed to think that the artist would do well could he repeat such a work the size of life."

ROYAL VETERINARY COLLEGE.—On April 8th, Dr. G. Fleming, C.B., Principal Veterinary Surgeon to the Forces, delivered a lecture to the students of the College on the subject of the "Art of Shoeing." In a previous lecture Dr. Fleming had discussed the history of the art, its antiquity, and its paramount importance in countries where horses were used for continuous work on hard roads, and showed that the art had been recognised in the past by kings and nobles, some of whom did not disdain to practise it. The concluding lecture, on April 8th, was entirely confined to the practical part of the subject, and the lecturer expressed his opinion that the art was a simple one, and, if properly carried out, free from most of the evils which are commonly asserted to belong to it. A chief evil, in his estimation, was the mutilation of the hoof by rasp and drawing-knife, which he strongly condemned. Iron shoes fastened with nails Dr. Fleming held to be necessary; and he contended that if the crust were properly lowered at the bottom of the foot, where alone the rasp might be safely used, nails might be driven so as to take a wide hold, coming out of the wall in such a way that at each fresh shoeing the old nail-holes might be obliterated. Sole and frog should be in contact with the ground, and he did not hesitate to nail far back to the heels, to gain security with few nails, as he was satisfied that the expansion at the posterior part of the foot, on which so much stress was laid by some, could only take place to a very slight extent. The chief expansion is at the upper part of the heels, between the lateral cartilages. In conclusion, the lecturer impressed on the students the necessity which existed for the supervision of the farrier's art by scientific and experienced veterinary surgeons, in order that the many abuses might be remedied.

VETERINARY SANITARY SCIENCE IN RUSSIA.—The good effects produced by the sanitary inspection of cattle are referred to in a recent report on Russian affairs. Cattle-breeding in South Russia has suffered a serious check in consequence of the heavy losses incurred by graziers from the outbreak of Rinderpest, which in recent years has carried off whole herds of oxen. The central Government at St. Petersburg, working through the Veterinary Department of the Medical Board, has established a Sanitary Board as an administrative body in every Government in European Russia. The Imperial Government also appoints a veterinary surgeon in each district, who corresponds with the Government Sanitary Board, and whose duty it is to inspect any herds or flocks suspected of contagious diseases, and to see that all infected animals, as well as those suspected of infection, are

slaughtered. The expenses of this administration, and the compensation awarded to owners who have sustained losses, are defrayed out of a tax levied on every animal slaughtered at the shambles or destined for exportation. The effect of these measures has been that the cattle plague is now said to be almost extinct in South Russia.

HEAVY LOSSES BY ABORTION IN MARES.—It is very much to be regretted, says the *Farming World*, that this unwelcome plague is playing serious havoc in not a few valuable studs this year. Mr. Johnstone, Lochburnie, has lost no fewer than five foals in this way, and one of the mares affected is the celebrated Sunray. In Lord Polwarth's stables four similar cases have been experienced. Such heavy losses are no small matter, considering the high prices Clydesdales are now commanding.

A FEMALE VETERINARY SURGEON.—Fräulein Stephanie Kruszewska, a Polish lady, having graduated with distinction at the Zurich Veterinary Institute, has recently successfully undergone a further test in the Warsaw Veterinary Institute, which allows her the privilege of practising in that city.

KILLING COWS IN INDIA.—Indian agriculture suffers greatly because of the general practice of killing cows, a practice peculiar to Mohammedans. A society has been formed to stop this practice, which has become so general that there is a scarcity of milk in many sections. It is believed that ninety per cent. of the meat eaten in India is cow beef, whereas the contrary is the case in most other countries. Consequently, the Indian oxen are diminishing in number, size, and strength, and the production of manure is decreasing.

Correspondence.

PROTECTIVE INOCULATION FOR CONTAGIOUS PLEURO-PNEUMONIA.

SIR,—In October last the Government of this colony taking advantage of the presence in Australia of Dr. Germont and M. Loir, two representatives of M. Pasteur, concluded an arrangement with these scientists to conduct a series of experiments with a view to discover a means of cultivating or preserving the virus of Pleuro-pneumonia for the inoculation of cattle. A laboratory was fully equipped for them, and they were provided with as many calves as the necessity of the experiment required. Yesterday a number of representative cattle-owners and medical gentlemen, with the Government Veterinarian, Mr. James Irving, M.R.C.V.S., attended, by invitation of the Board appointed for the purpose, to witness the results of the experiments so far as they have been proceeded with, and I enclose for your information, or for publication if you deem that desirable, a report of the proceedings from the *Brisbane Courier* of to-day.*

In Great Britain the virtue of inoculation as a preventive of Pleuro-pneumonia appears still to be an open question. In Australia, on the contrary, twenty-seven years' experience of the practice has convinced cattle-owners of its efficacy, and an Australian cattle-owner who disbelieves in it is now a *rara avis*.

The difficulty hitherto has been that cattle-owners could not secure a supply of virus with which to inoculate until the disease had actually reached their herds or the borders of their runs. The experiments of Dr. Germont

* This appears in the Journal for this month.

and M. Loir have demonstrated the fact that a constant supply of pure lymph can now be kept up; that a few drops can be sent by post, in a sterilised hermetically sealed tube, to the uttermost part of the colony. This quantity injected into a calf or calves, under the skin behind the shoulder, will provide sufficient pure lymph to inoculate a whole herd.

Brisbane, *March 9th.* P. R. GORDON,
Chief Inspector of Stock, Queensland.

The following letter refers to a summary of these experiments in Queensland:—

DEAR SIR,—I enclose you, for insertion in the Journal, copy of a letter published in last week's *North British Agriculturist.* I do so in the belief that it will be of some interest to those members of our profession who know, or desire to know, something of the practice of inoculation, and as a reminder to others that our knowledge of the subject is not by any means exhausted. In view of the action of the Government of this country, as compared with that of the comparatively young colony of Queensland, I cannot help thinking that our colonial friends, in carrying out these and other experiments, have scored, and that it would well become certain individuals to devote some of their spare energy to a little work of the same kind. We want less talk.

Yours faithfully,

Edinburgh, *May 6th.* R. RUTHERFORD, F.R.C.V.S.

BLOODLESS FISH AND FLESH.

SIR,—I have already, in the *Morning Post*, shown the advantages of bleeding fish immediately after capture, and with the hope of interesting some of your readers, I will now also show its necessity for meat and poultry. The earliest of naturalists and the founder of sanitary science was probably the divine, humane, and far-seeing Moses, who insisted that all animals should be so killed that their flesh should contain practically no blood. Upwards of 2,000 years ago the Jews had recognised that domestic food animals had their chief diseases situated in their lungs, or the Lung Consumption of modern times. The early Jewish rabbis, following the preaching, precept, and practice of Moses, were true friends and lovers of animals. I believe I am right in saying that although the Old Testament frequently alludes to man's duties and responsibilities towards animals, the New Testament omits this subject. The Buddhists are not allowed to kill fish, though their priests have always been specially fond of a fish diet. Apparently one of the oldest Jewish institutions has been their clerical veterinary practitioners, educated, humane, religious, good men, or *shochets*, whose duties included that of killing beasts and poultry, but who appear always to have ignored examining fish. They were specially enjoined to cause the animals for slaughter as little pain as possible; hence their method of cutting the animal's throat with a long, sharp, unnotched knife illustrates how seriously every detail of their profession had been studiously considered, to avoid all possible prolongation of pain to the animal. These priestly veterinary experts were appointed absolutely to protect and preside over the immediate interests and health of their entire people, and not to make loopholes for the sale and distribution of unsound, unhealthy, diseased, or other improper food. They have considered and acted that every killed animal is unhealthy till its technical inspection and dissection after death shall have proved its goodness, as otherwise the carcase is forbidden to orthodox Jews.

Blood and other fluids found in cattle putrefying more rapidly than flesh, muscle, or fat, convinced Moses of the necessity to remove all blood. Modern science confirms this view by the microscope so frequently revealing

putrefactive germs, or bacteria, or microbes in the blood and internal fluids of fish, flesh, and fowl, whilst their muscles and fat may still be quite healthy. But if the blood has once become contaminated by these putrefactive germs it is likely to at once infect the sound flesh, muscle, and fat. Indeed, in preserving all animal substances it is advisable to keep them as dry as possible, which is the chief factor in curing, salting, or smoking fish or meat. Handling fish or meat tends always to accelerate and often to invite and start putrefaction. Hence, in the frozen meat trade, not alone is the carcase kept hard, frozen, and dry, but it is invariably covered with a stout sack or shirt, to prevent dirt by handling or other means injuring the meat. Hence fish, freshly captured and placed on their bellies upon the too-frequently filthy board at the bottom of the fishing-smack, will often have their bellies rotten whilst their sides and back remain comparatively sound. Other conditions and circumstances being equal, it is found that fish and flesh keep in proportion to the length, density, compactness, and hardness of the microscopic fibres which unite together in bundles to form the muscle. Fat, of course, keeps much longer good than muscle, whilst moisture, high temperatures, and exposure to the direct rays of the sun hasten decomposition. Over-driven cattle and fish drowned in the meshes of the nets, as well as all animals whose strength has been exhausted by the chase or previous privation or disease, are prone to decompose with increased rapidity. The same tendency to rapid putrefaction after death has been chronically observed by army doctors in troops who have died on the battle-field after long fasting, fatigue, and fighting.

In England the Jewish veterinary practitioners' or Shechita Board is now under the able presidency of the distinguished practical philanthropist Mr. Samuel Montagu, M.P., and its statistics show that about one-quarter of the animals slaughtered under its conscientious inspection are declared to be unfit for human food according to the strict doctrines of the orthodox Jews. This veterinary-priestly Jewish board affixes a seal on all sound healthy meat killed according to the Jewish ritual, which may be called its ecclesiastical and sanitary duty, whilst its financial part, which is used to support the synagogues, consists in levying a light tax of 8d. on the killed bullock, 6d. on a calf, 4d. on a sheep, and 3d. on each head of poultry. These are the prices for London, whereas in some country districts as much as 1d. a pound is put on their orthodox sanitary meat. Recently an eminent physician, Dr. Henry Behrend, has written an exhaustive treatise on diseases communicated to man by eating unhealthy animals. He shrewdly attributes much of the longevity, the general freedom of Jews from scrofula and consumption to the great care they bestowed upon the examination of their meat. Such causes, though not producing an immediate effect, yet by their accumulated transmission through innumerable generations eventually exercise a protective power, to which much of the indomitable physical endurance of the Jewish race may be perhaps derived.

The ancient Egyptians, though they appear to have salted and cured fish from their early history, yet, unlike the ancient Chinese, the Egyptians had not introduced fish farming into their sciences. Though Moses was well acquainted with the practical treatment of land animals, he does not seem to have had any opportunities to have made himself familiar with fish, and most of the learned rabbis seem also to have neglected some of the uses of sea and fresh-water fishes. Hence the orthodox Jews avoid eating the eel, which is a remarkably healthy fish, the usual constituent of mock turtle, and too often the chief ingredient of turtle soup. Equally unwisely Jews are forbidden to eat oysters.

After the Norwegians, probably the Jews are about the best judges of fish and how to cook it. Much of the excellence of their fried fish is due to the

trouble which the Jews take in selecting good oils. Scientifically, fried fish is especially healthy, as the muscles of fish rarely contain any appreciable fat or oil, which, as in the codfish and shark families, is almost exclusively confined to their livers—practically organic sponges saturated with oil.

Moses and his disciples the Talmudists appear all to have overlooked and omitted the forbidding of unbled fish, which is much more unhealthy than unbled meat. The conventional plan of boiling fish is fish spoiling, and the water in which such fish is cooked absorbs a large portion of the best nutriment of the food, and also extracts much of the delicate characteristic natural flavour of fish.—Yours, etc., J. LAWRENCE HAMILTON, M.R.C.S.

May 11th.

THE ANNUAL MEETING OF THE ROYAL COLLEGE.

SIR,—It is most cheering and gratifying to hear an encouraging word spoken of any of the members of Council, more especially so since it is spoken by one of the "troublesome members," and was applied to our worthy President at the late annual meeting. Much irrelevant matter is annually poured forth by these self-styled troublesome members and their coadjutors. Some of them do it in a turbulent and hostile manner. Nevertheless, they stimulate others, who have a more pacific and courteous habit of speech, to ventilate the subjects referred to in the annual report. It has occurred to me that if these discussions were conducted in a more kindly and amicable spirit, they would be more dignified, instructive, and useful. As it is, the spirit of antagonism and enmity seems to pervade the minds of those who attack the Council so severely and with so much injustice. It would seem that this feeling is allowed to dominate and exclude every other feeling, turning the annual meetings into a bear-garden rather than a gathering of scientific gentlemen, a scene on which every right-minded member who is loyal to the College, every well-wisher to his profession, looks upon more in sorrow than in anger, laments and condemns. I do not think there is a single member of Council who would wish to restrain discussion at the annual meeting, but would rather give every encouragement to it, and who would with pleasure listen to other members of the profession fully ventilating every subject which comes on the *tapis*. But in saying this it will be the desire of every well-regulated mind that the time of the meeting should be usefully occupied, not wasted, as it too often is, in personalities, in trying to incriminate members, and in stultifying the acts of others who have devoted their lives, their best energies, and even their fortunes, in endeavouring to serve their profession honestly and earnestly.

The 9th Clause.—This subject has been discussed *ad nauseam*, but I have heard no arguments against it of equal weight and importance with those in its favour. Its tendency is to elevate our profession. No argument has been used to controvert this fact. Its object is to create a desire, a necessity, in fact, to increased study, to acquire more and higher knowledge, and thus in each individual case by taking this higher degree the candidate raises himself to a higher level, and so far the Fellows cause our profession to become more respected and more useful. Surely no one will find fault with this. We fully and freely admit that there are numbers of members who have not become Fellows who are equal in every sense of the word with those who have taken the degree, and who, by doing so, have secured all the benefits and privileges it bestows. At the time the Charter containing the ninth clause was obtained, every member of the profession was solicited to give his opinion, every veterinary association throughout the land discussed it and gave a vote in its favour, and the Council anxiously and often considered the whole matter, and felt satisfied it was a wise and beneficial course to adopt.

The Dual Appointment.—This subject has been discussed *ad infinitum*, but no argument has yet been advanced to show that any man of education, intelligence, and experience is a less useful and valuable member of Council because he happens to be an Examiner; neither has it been proved that any man of education, intelligence, and experience is a less efficient Examiner because he is a member of Council. I know it from actual experience, that those Examiners who are members of Council are some of the best members we have. Most regular in their attendance, they take the greatest interest in every matter that comes before the Council; they spare neither trouble nor expense if they can only be of some service to their profession. Amongst them we have men of high intelligence, knowledge, and experience, men eminently qualified to justly gauge the students' efficiency, and who are incapable of doing an injustice to the student.

There is another way which might be adopted with these two irrepressible subjects, viz., let the troublesome members get another Charter containing the various clauses they, in their profound wisdom, see are required; then get themselves elected members of Council or Examiners. When this is accomplished all blustering rowdyism will be a thing of the past, and no one would have the audacity to ever whisper that either the Council or Examining Board was not perfect.

Last year the members of the whole profession spoke with a voice which was irresistible and unmistakable; they gave those candidates whom they knew were in favour of the 9th clause and the dual office a greater number of votes than was ever awarded to any members of our profession; and this year the same spirit and same principle prevailed—the two candidates holding the dual appointment and in favour of the 9th clause were re-elected; and it is no secret that had other candidates presented themselves occupying the same positions they would have been equally successful. As it was, one of the candidates, who is an Examiner, and who is a strong advocate of the 9th clause, had the highest number of votes recorded for him next to the successful candidates.

Manchester, *May 17th.* THOMAS GREAVES, F.R.C.V.S.

PRACTICE *versus* THEORY.

DEAR SIR,—I intend to relate an incident that lately happened, and allow others to moralise, as I am not much that way inclined. Scene: A horse-dealer's yard, the proprietor, his head man, nagsman, and grooms, engaged in their usual morning's work, exercising, cleaning, etc., etc. In walks an individual with high hat, cuffs, very broad-bottomed continuations, and general "get-up" by no means "horsey." Informing the dealer that he was a veterinary surgeon, and that he desired to purchase, for a client, a hackney, he was shown several useful animals of that class. Myself happening now to come along, for the purpose of treating a sick one, I could not avoid noticing the peculiar performances of the gentleman in black. First, he would endeavour to handle the hocks of the animal. Then he would pat, and talk in the most endearing manner to the hack. I am not first class in my descriptive powers, but I must say that he much amused me. But when I subsequently learned that he was a member of R.C.V.S. my amusement was ended and disgust set in. The technical terms he used were lengthy, but he admitted that he did not know a snaffle from a curb bridle. I could enumerate several other instances of a similar character, where the manner of the gentlemen referred to has been somewhat peculiar, some might be inclined to say effeminate, showing *most clearly* by the "weak-kneed," undecided, and nervous manner in which they *endeavoured* to examine their horses, that they were certainly not "born horsemen," but rather that they would be "more at home" probably

in a discussion with their sisters or mammas about the merits or demerits of an infusion of tea. There is one thing *quite certain*, they never themselves examined many horses as to soundness. Horsemen, as a rule, notice these things, and sometimes make some sarcastic remarks. Manipulative skill and self-confidence are seldom acquired by hearing lectures. Like morality, *the earlier* they are taught the better. It is impossible for any one to entertain greater regard and respect for horses and dogs than myself, yet I fail to see the cruelty in my suggestion, viz., to allow veterinary students to operate—*i.e.*, the general every-day operations—upon condemned animals in the large knackers' yards of the metropolis. When a student at St. Pancras I attended these yards at night. Many and many a night I watched the slaughterer open and dissect the poor worn-out animals from the streets of London. Most interesting and instructive nights! A large number of these animals have chronic enlargements, and many of them peculiar internal ailments. Rasping the teeth, firing dead legs, tracheotomy, passing the catheter, trephining, etc., etc., are all minor operations which surely could do no harm, and not be so very painful to the animal so soon to die. I believe there are some legal restrictions as to the treatment of animals while in the hands of the knacker, but what they are I do not exactly know. Let a man be ever so well versed in theory—he may even possess a ton of gold medals for his achievements in botany, chemistry, etc.—unless he can "go about a horse" as a horseman should, he will bring ridicule upon himself and the veterinary profession. I can call to mind several, ay, a great many, men with diplomas, and generally they are great and good talkers, who do not know the simplest details of their profession. They have not half as much liking for a horse as a sailor has for the ship he sails in. They would talk of anything rather than hunting and general matters pertaining to horses. In a word, there are many men *now* in the veterinary profession who have made a great mistake in selecting it. The veterinary surgeon, like the poet, must be born, not made. Let him make friends of his horses, and trouble less about *social* status.

"SNAFFLE BRIDLE."

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from T. Hopkin, Manchester; R. Rutherford, Edinburgh; R. W. Burke, A.V.D., Curragh; J. Leather, Liverpool; A. B. Cottell, A.M.S., Chatham; A. Jones, 2nd Life Guards, London; P. R. Gordon, Queensland; D. E. Salmon, Washington; E. Nocard, Alfort, Paris; J. L. Hamilton, London; T. Greaves, Manchester; W. T. Greenhalgh, Leeds; J. Armstrong, Penrith; S. Villar, Harrow; R. Dawson, Great Clacton; L. H. Howard, Boston, U.S.A.; "Snaffle Bridle;" A. W. Hill, London.

BOOKS AND PAMPHLETS: *W. A. Conklin*, Report of the Central Park Menagerie; *D. E. Salmon*, Hog Cholera; its History, Nature, and Treatment; *St. Polansky and H. Schindelka*, Die Rhinoskopie und die Laryngoskopie au Pferden.

JOURNALS, ETC.: *Wochenschrift für Thierheilkunde und Viehzucht; Journal of the National Agricultural Society of Victoria; American Journal of Comparative Medicine and Surgery; North British Agriculturist; Giornale Veterinaria Militare; Journal of Medicine and Dosimetric Therapeutics; Lancet; Echo Vétérinaire; Recueil de Méd. Vétérinaire; British Medical Journal; Annales de Méd. Vétérinaire; Journal de Med. Vétérinaire; Revue Vétérinaire; American Veterinary Review; Medical Press and Circular; Der Thierarzt; Russian Journal of Veterinary Science; Oesterreichische Zeitschrift für Wissenschaftliche Veterinärkunde; American Live Stock Journal; Edinburgh Medical Journal; Live Stock Journal.*

NEWSPAPERS: *Surrey and Hants News; Daily Chronicle; Brisbane Courier; Brisbane Telegraph; Naval and Military Gazette.*